Lake Tippecanoe
Aquatic Vegetation Management Plan Update
February 8, 2006

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INTRODUCTION

This report was created in order to update the Lake Tippecanoe Aquatic Vegetation Management Plan. The plan update was funded by the Lake Tippecanoe Property Owners Association (LTPOA). The update serves as a tool to track changes in the vegetation community, to adjust the action plan as needed, and to maintain eligibility for LARE funds. Items covered include the 2005 sampling results, a review of the 2005 vegetation controls, and updates to the budget and action plans. Once reviewed and approved, the update should be included in the original vegetation management plan, following the reference section and prior to the appendix.

2005 PLANT SAMPLING

Two tier II surveys were completed on Tippecanoe, Oswego, and James (Little Tippe) Lakes in order to document changes in the plant community and to determine the success or failure of control techniques. Surveys were completed for all three lakes on May 17 and August 8, 2005.

Lake Tippecanoe Sampling Results

May Tier II survey, Lake Tippecanoe

On May 17, 2005 a Tier II survey was completed on Lake Tippecanoe. A Secchi disk reading was taken prior to sampling and was found to be 13.0 feet. Plants were present to a maximum depth of 17 feet. One hundred nineteen sites were randomly selected within the littoral zone. Results of the sampling are listed in Table 1. Overall aquatic vegetation distribution and density is illustrated in Figure 1 (in species location and density figures, plant location is illustrated by a color coded dot, the color of the dot represents the density of the species and sample sites without that species are illustrated by a smaller white diamond). The bottom half of Table 1 illustrates the frequency of occurrence, relative density, mean density, and dominance index of individual species collected from Lake Tippecanoe in May 2005.

Table 1. Occurrence and abundance of submersed aquatic plants in Lake Tippecanoe May 17, 2005.

Date:	5/17/2005		Littoral sites with plants:	81		Species diversity:	0.83
Littoral depth (ft):	17		Number of species:	10		Native diversity:	0.79
Littoral sites:	114		Maximum species/site:	4		Rake diversity:	0.80
Total sites:	119		Mean number species/site:	1.13		Native rake diversity:	0.79
Secchi:	13		Mean native species/site:	0.77		Mean rake score:	1.46

Common Name	Site frequency	Relative density	Mean density	Dominance
Curlyleaf pondweed	31.6	0.49	1.56	9.8
Flatstem pondweed	22.8	0.24	1.04	4.7
Chara	20.2	0.21	1.04	4.2
Coontail	17.5	0.21	1.20	4.2
Northern watermilfoil	8.8	0.10	1.10	1.9
Eurasian watermilfoil	5.3	0.08	1.50	1.6
Richardson's pondweed	4.4	0.04	1.00	0.9
Eel grass	3.5	0.03	1.00	0.7
Water stargrass	2.6	0.03	1.00	0.5
Elodea	0.9	0.01	1.00	0.2

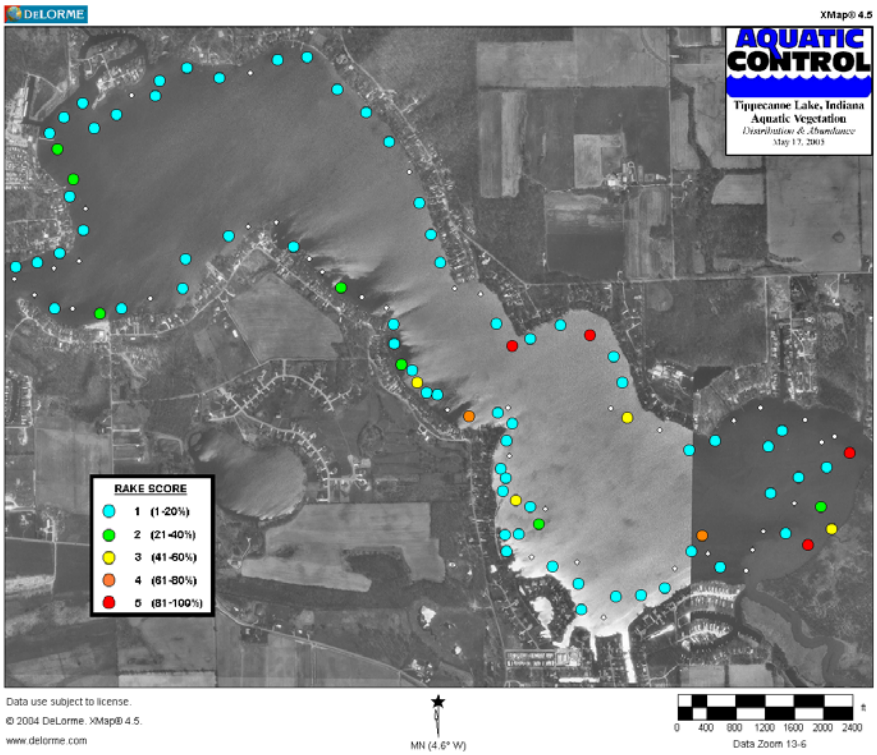

Figure 1. Lake Tippecanoe, aquatic vegetation distribution and abundance, May 17, 2005.

A total of ten species were collected of which two of the species were exotic, curlyleaf pondweed and Eurasian watermilfoil. Curlyleaf pondweed was present at the highest percentage of sample sites (30%) and ranked first in relative density. Location and density for curlyleaf pondweed is illustrated in Figure 2. Flatstem pondweed ranked second in site frequency (21%) and relative density (Figure 3). Chara ranked third in site frequency (19%) and relative density followed by coontail (Figure 4 & 5). Northern watermilfoil ranked fifth in site frequency (8%) and relative density. Eurasian watermilfoil ranked sixth in site frequency (5%) and relative density. Location and density of Eurasian watermilfoil is illustrated in Figure 6. Richardson's pondweed, eel grass, water stargrass, and elodea were also present but at lower abundance and density ratings.

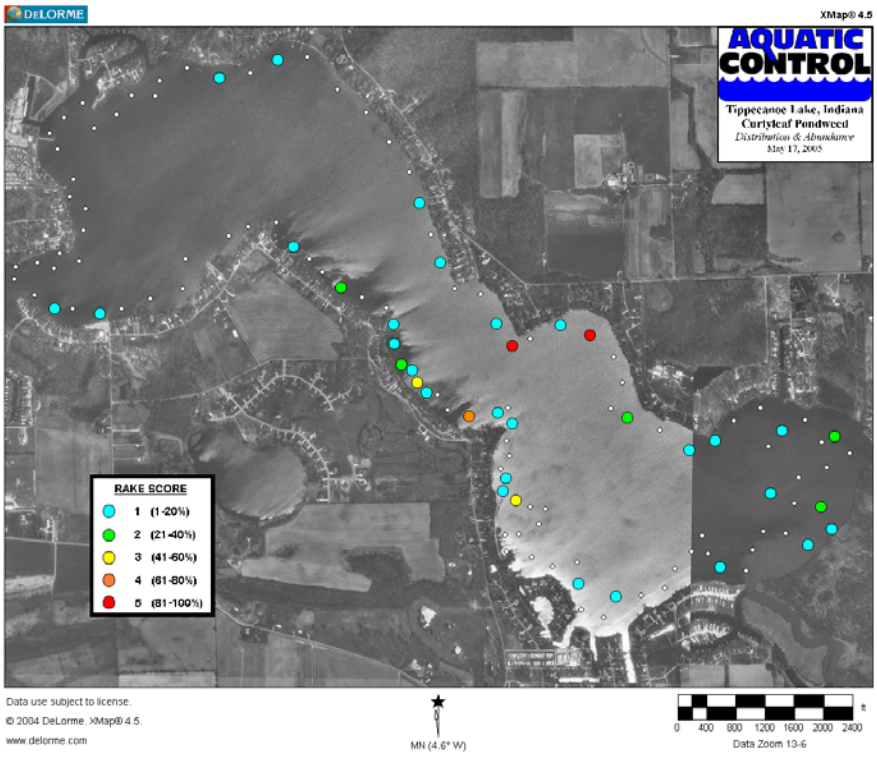

Figure 2. Lake Tippecanoe, curlyleaf pondweed distribution and abundance, May 17, 2005.

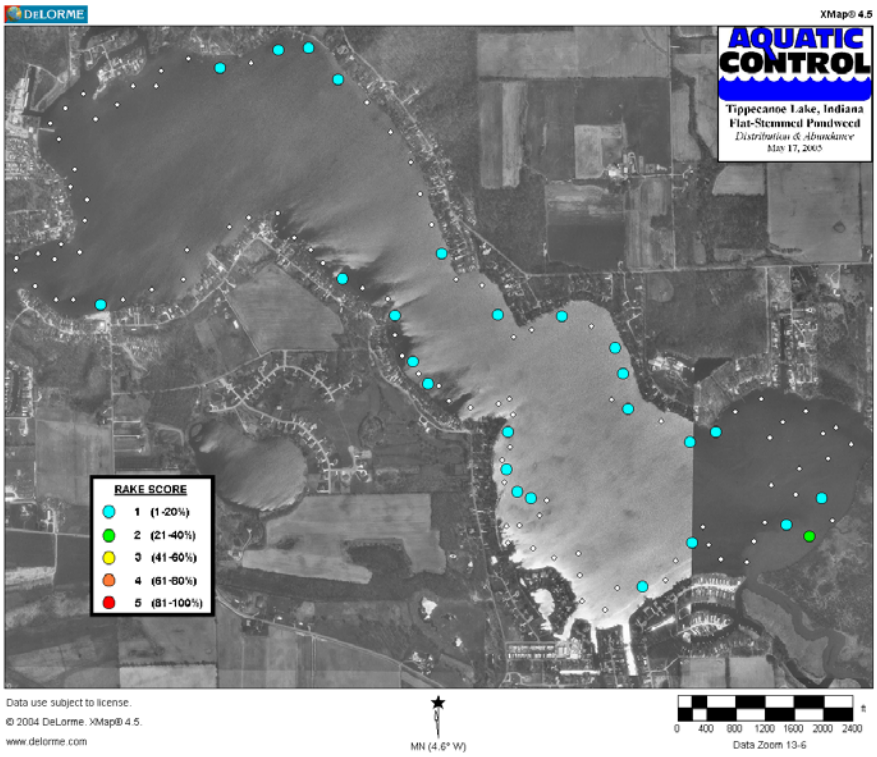

Figure 3. Lake Tippecanoe, flatstem pondweed distribution and abundance, May 17, 2005.

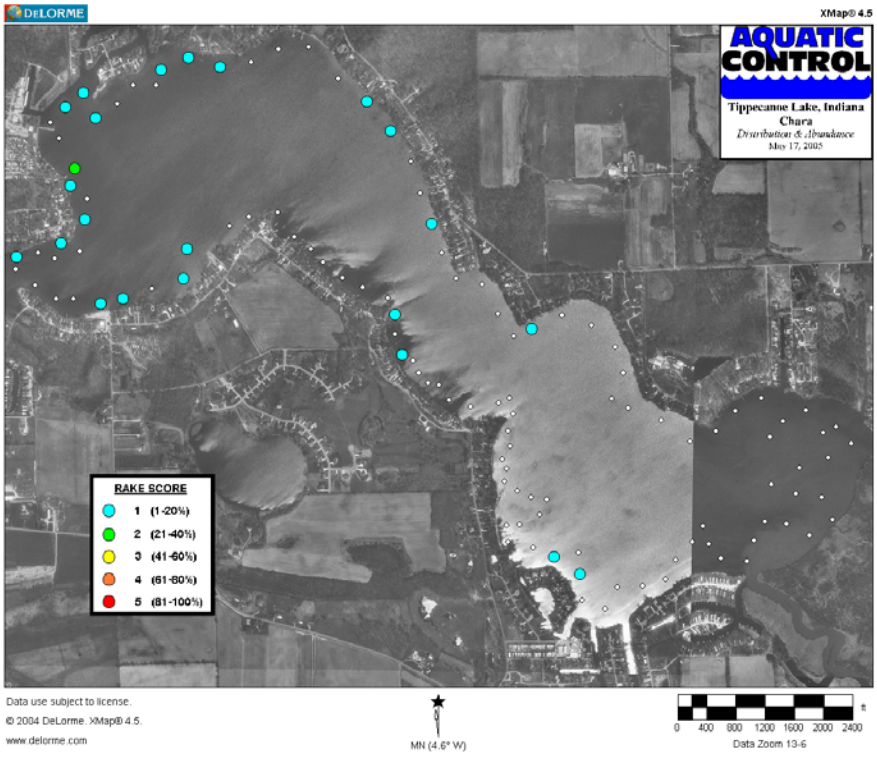

Figure 4. Lake Tippecanoe, chara distribution and abundance, May 17, 2005.

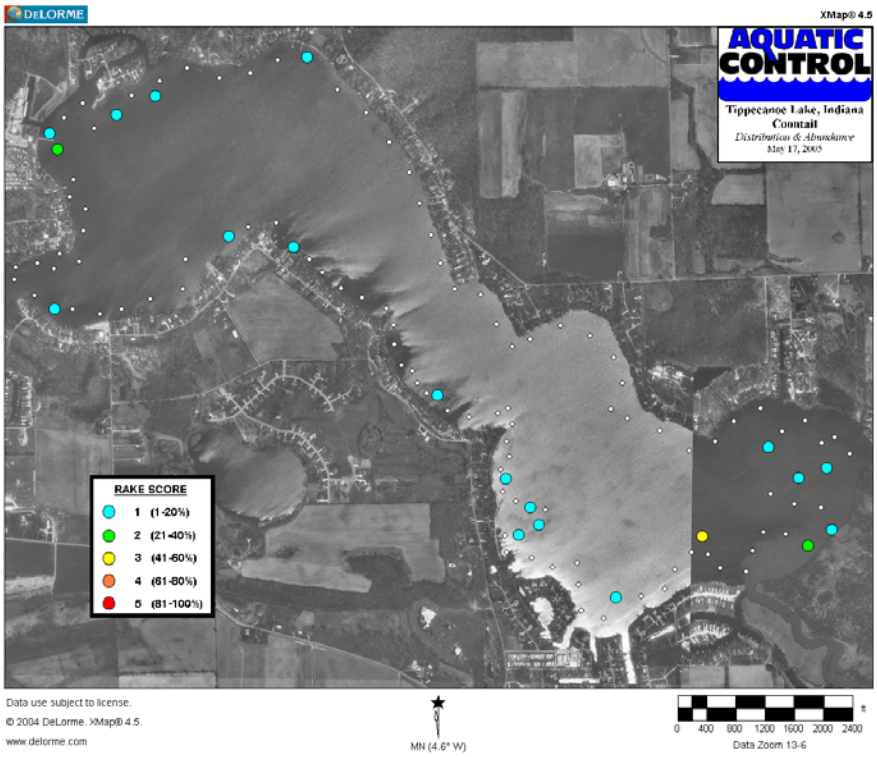

Figure 5. Lake Tippecanoe, coontail distribution and abundance, May 17, 2005.

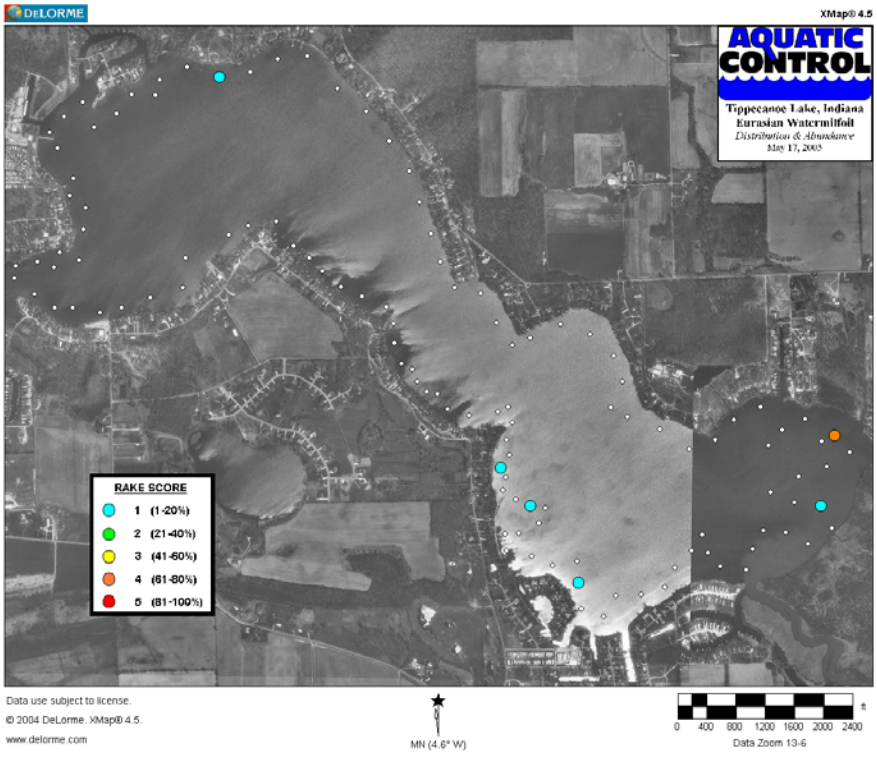

Figure 6. Lake Tippecanoe, Eurasian watermilfoil distribution and abundance, May 17, 2005.

August Tier II survey, Lake Tippecanoe

The second round of Tier II sampling took place on August 8, 2005. A Secchi disk reading was taken prior to sampling and was found to be 6 feet. Plants were present to a maximum of 22 feet. The same one hundred nineteen sites were sampled in August as were in May. Results of the sampling are listed in Table 2. Overall aquatic vegetation distribution and density is illustrated in Figure 7.

Table 2. Occurrence and abundance of submersed aquatic plants in Lake Tippecanoe August 8, 2005.

Date:	8/8/2005		Littoral sites with plants:	98		Species diversity:	0.83
Littoral depth (ft):	22		Number of species:	15		Native diversity:	0.82
Littoral sites:	118		Maximum species/site:	4		Rake diversity:	0.75
Total sites:	119		Mean number species/site:	1.74		Native rake diversity:	0.74
Secchi:	6		Mean native species/site:	1.70		Mean rake score:	3.84

Common Name	Site frequency	Relative density	Mean density	Dominance
Eel grass	58.00	1.81	3.12	36.10
Coontail	26.90	0.72	2.69	14.50
Chara	18.50	0.42	2.27	8.40
Water stargrass	16.00	0.31	1.95	6.20
Northern watermilfoil	11.80	0.13	1.14	2.70
Flatstem pondweed	11.80	0.14	1.21	2.90
Sago pondweed	10.10	0.29	2.92	5.90
Richardson's pondweed	7.60	0.13	1.67	2.50
Southern naiad	3.40	0.03	1.00	0.70
Eurasian watermilfoil	3.40	0.04	1.25	0.80
Illinois pondweed	2.50	0.03	1.33	0.70
Slender naiad	1.70	0.02	1.00	0.30
Elodea	0.80	0.01	1.00	0.20
Curlyleaf pondweed	0.80	0.01	1.00	0.20
Small pondweed	0.80	0.01	1.00	0.20

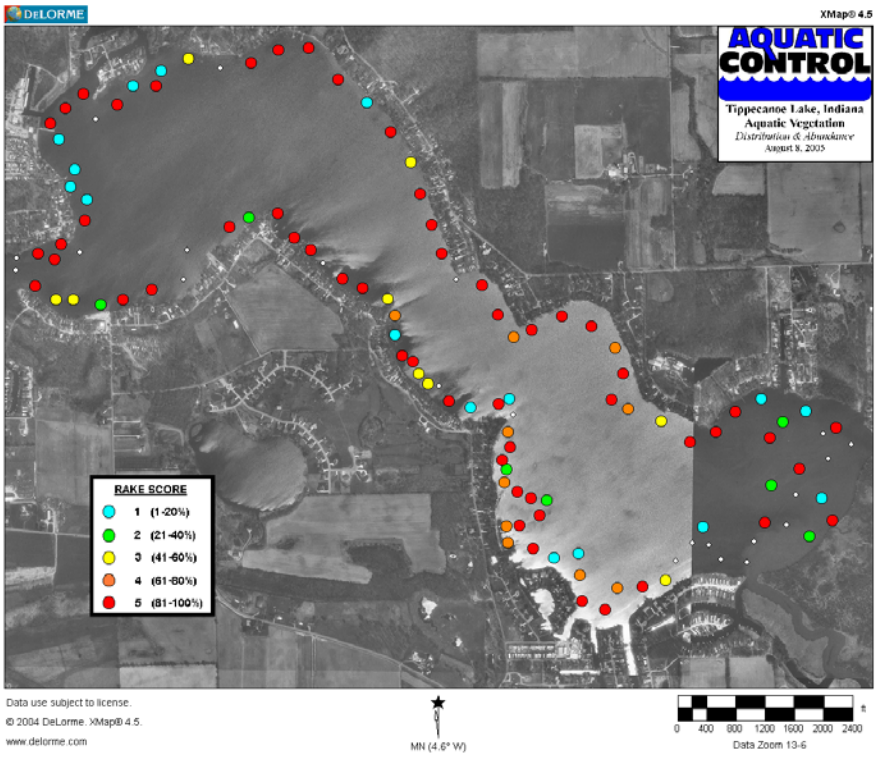

Figure 7. Lake Tippecanoe, overall aquatic vegetation distribution and density, August 8, 2005.

A total of 15 species were collected of which 13 of the species were native. Eurasian watermilfoil and curlyleaf pondweed were the only exotic species collected. Eel grass was present at the highest percentage of sample sites (58%) and also the highest relative density (Figure 8). Coontail ranked second in site frequency (26%) and relative density (Figure 9). Chara ranked third in site frequency (18%) and relative density followed by water stargrass which ranked fourth in site frequency (16%) and relative density. Northern watermilfoil, flatstem pondweed, sago pondweed, Richardson's pondweed, southern naiad, Eurasian watermilfoil, Illinois pondweed, slender naiad, elodea, curlyleaf pondweed, and small pondweed were all present but at lower abundance and density. Location and density of Eurasian watermilfoil is illustrated in Figure 10. Location and density of curlyleaf pondweed is illustrated in Figure 11.

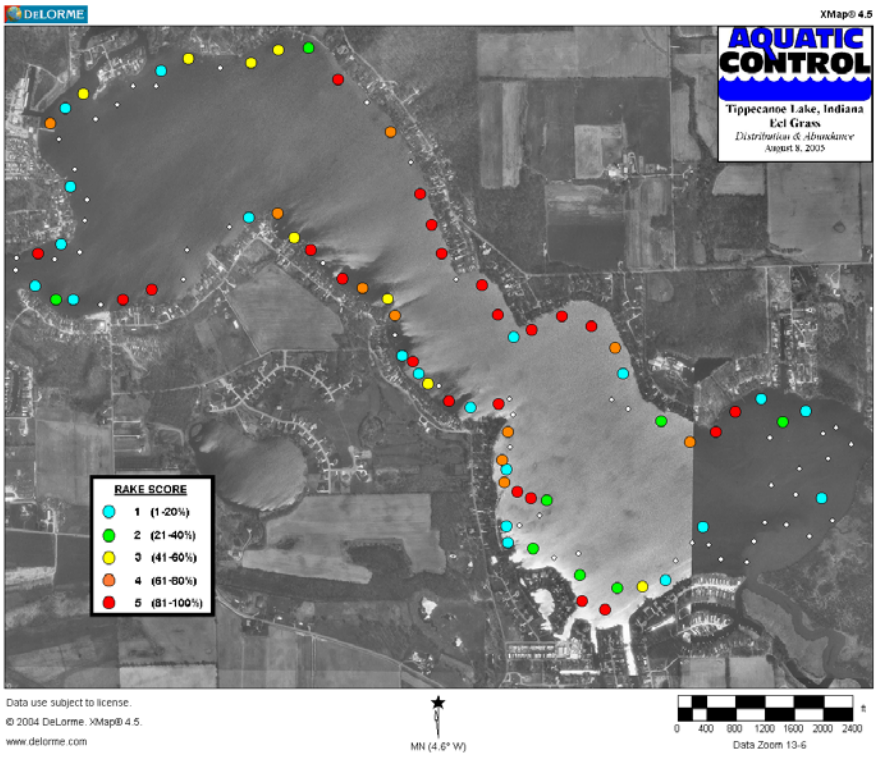

Figure 8. Lake Tippecanoe, eel grass distribution and abundance, August 8, 2005.

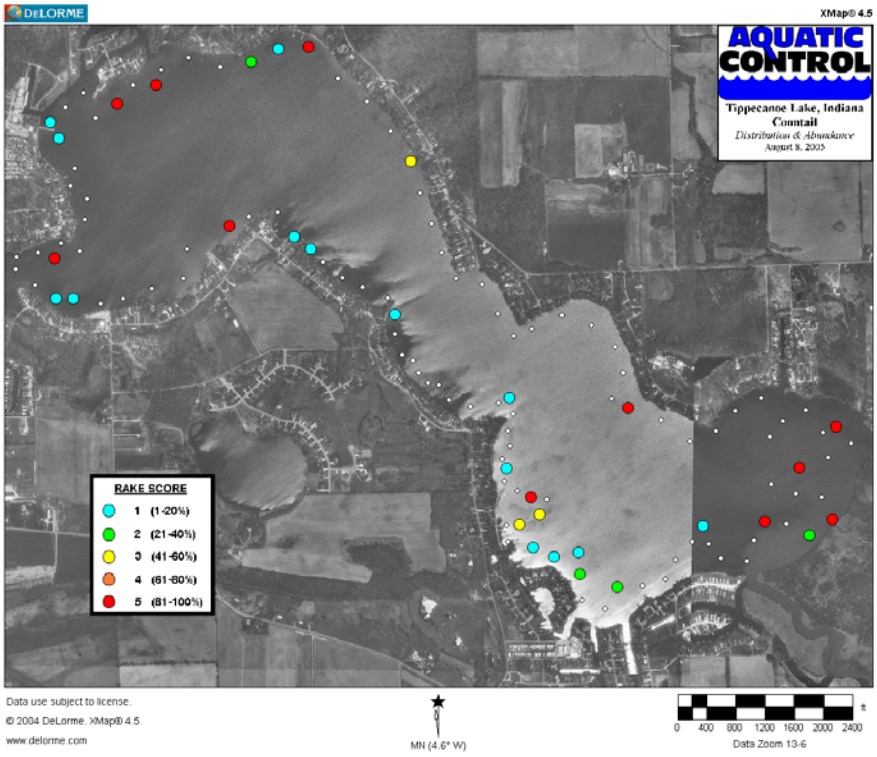

Figure 9. Lake Tippecanoe, coontail distribution and abundance, August 8, 2005.

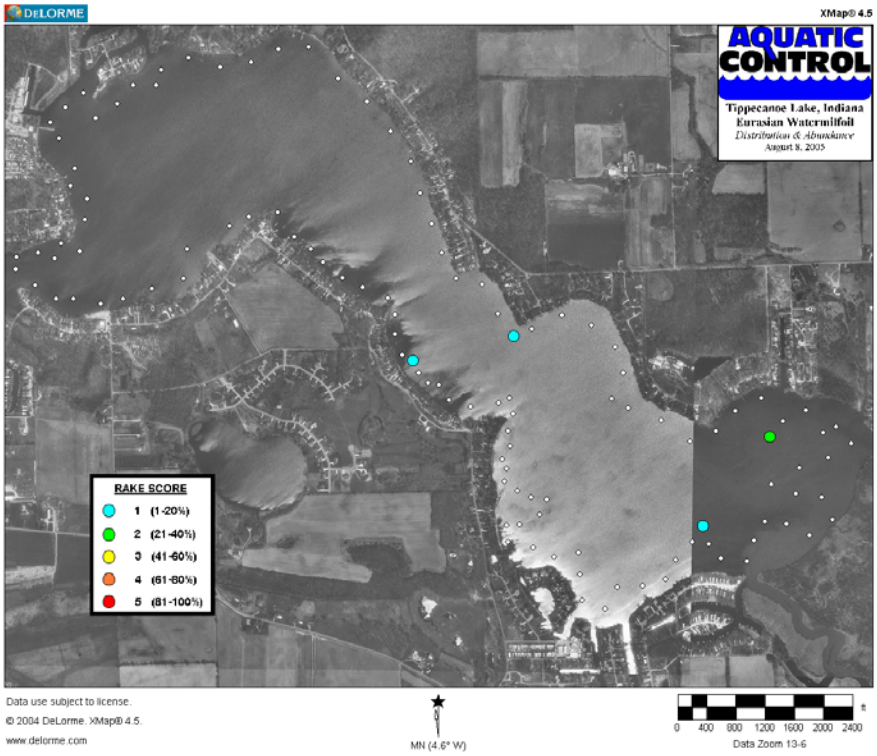

Figure 10. Lake Tippecanoe, Eurasian watermilfoil distribution and abundance, August 8, 2005.

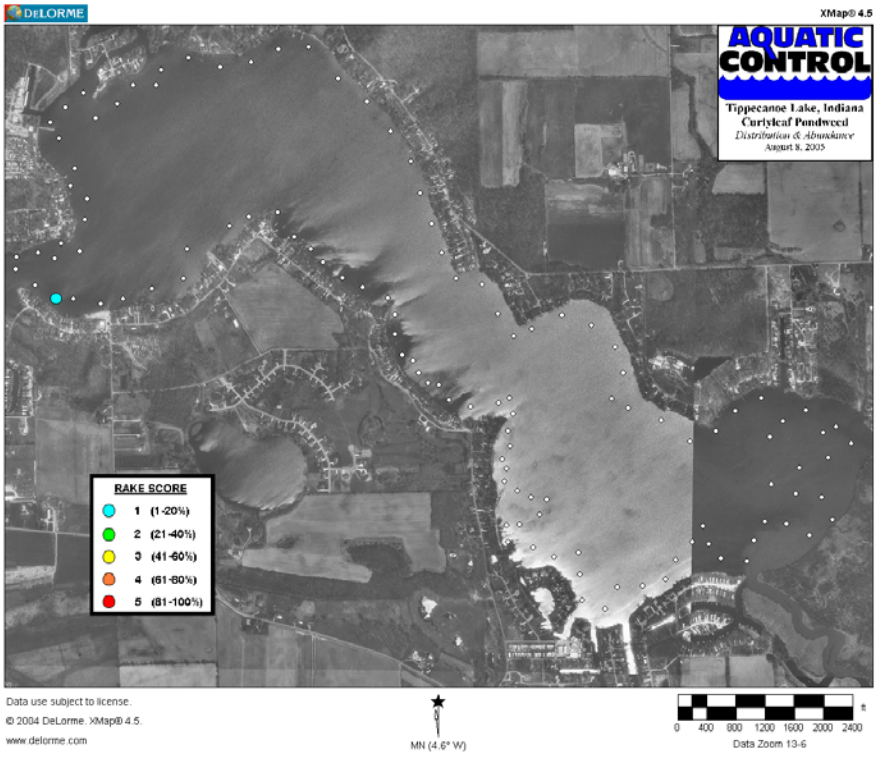

Figure 11. Lake Tippecanoe, curlyleaf pondweed distribution and abundance, August 8, 2005.

May Tier II survey, Oswego Lake

The first tier II sampling event on Oswego Lake took place May 17, 2005. A Secchi disk reading was taken prior to sampling and was found to be 15.0 feet. Plants were present to a maximum of 12 feet. Forty sites were randomly selected within the littoral zone**.** Results of the sampling are listed in Table 3. Overall aquatic vegetation distribution and density is illustrated in Figure 12. The bottom half of Table 3 illustrates the frequency of occurrence, relative density, mean density, and dominance index of individual species collected from Oswego Lake May 17, 2005.

Table 3. Occurrence and abundance of submersed aquatic plants in Oswego Lake, May 17, 2005.

Date:	5/17/2005		Littoral sites with plants:	30		Species diversity:	0.83
Littoral depth (ft):	12		Number of species:	7		Native diversity:	0.76
Littoral sites:	35		Maximum species/site:	3		Rake diversity:	0.80
Total sites:	40		Mean number species/site:	1.25		Native rake diversity:	0.75
Secchi:	15		Mean native species/site:	0.93		Mean rake score:	1.43

Common Name	Site frequency	Relative density	Mean density	Dominance
Chara	31.4	0.34	1.09	6.9
Coontail	28.6	0.31	1.10	6.3
Curlyleaf pondweed	25.7	0.60	2.33	12.0
Flatstem pondweed	25.7	0.26	1.00	5.1
Northern watermilfoil	14.3	0.14	1.00	2.9
Eurasian watermilfoil	11.4	0.14	1.25	2.9
Richardson's pondweed	5.7	0.06	1.00	1.1

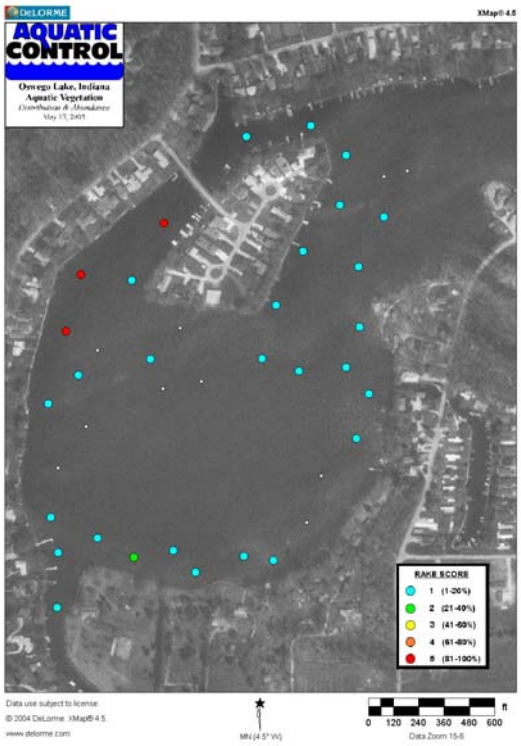

Figure 12. Oswego Lake, overall aquatic vegetation distribution and density, May 17, 2005

A total of 7 species were collected of which 5 of the species were native. Eurasian watermilfoil and curlyleaf pondweed were the only exotic species collected. Chara was present at the highest percentage of sample sites (27%) but ranked second in relative density. Location and density of chara is illustrated in Figure 13. Coontail ranked second in site frequency (25%), but ranked third in relative density (Figure 14). Curlyleaf pondweed ranked third in site frequency (22%) but ranked first in relative density (Figure 15). Flatstem pondweed ranked fourth in site frequency (22%) and relative density. Northern watermilfoil ranked fifth in site frequency (12%), relative density, and dominance. Eurasian watermilfoil ranked sixth in site frequency (10%) and relative density (Figure 16). Richardson's pondweed ranked seventh in site frequency (5%), and relative density. Northern watermilfoil, largeleaf pondweed, small pondweed, spiny naiad, elodea, bladderwort, and nitella were also present at a lower abundance and density.

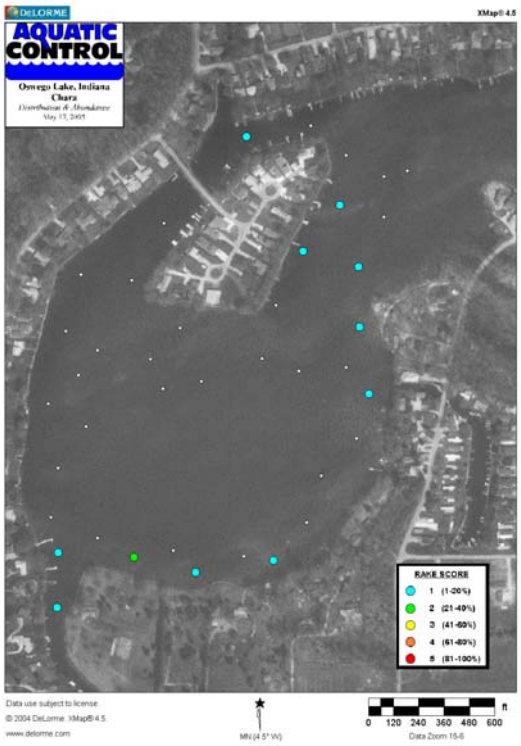

Figure 13. Oswego Lake, chara distribution and abundance, May 17, 2005

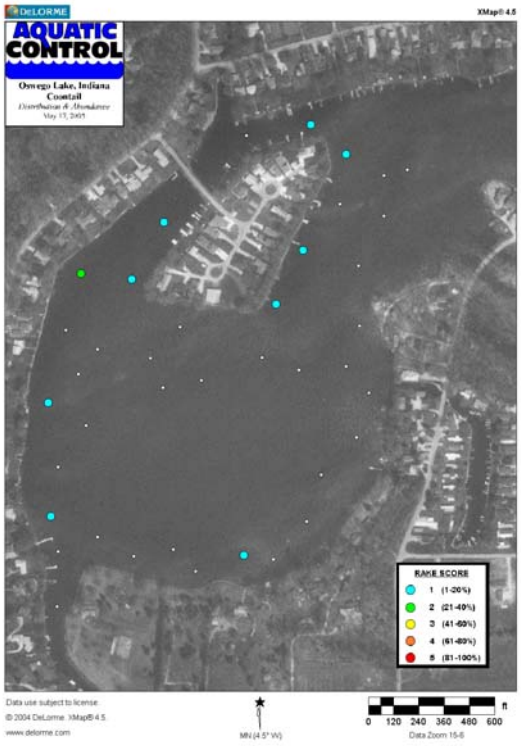

Figure 14. Oswego Lake, coontail distribution and abundance, May 17, 2005

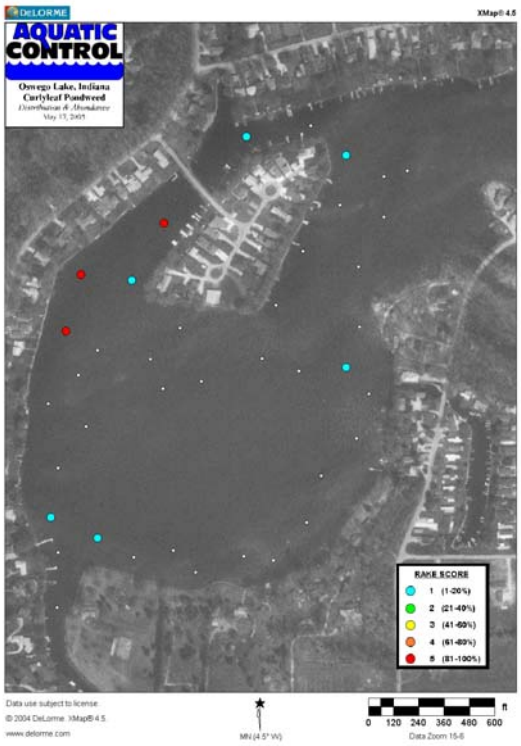

Figure 15. Oswego Lake, curlyleaf pondweed distribution and abundance, May 17, 2005

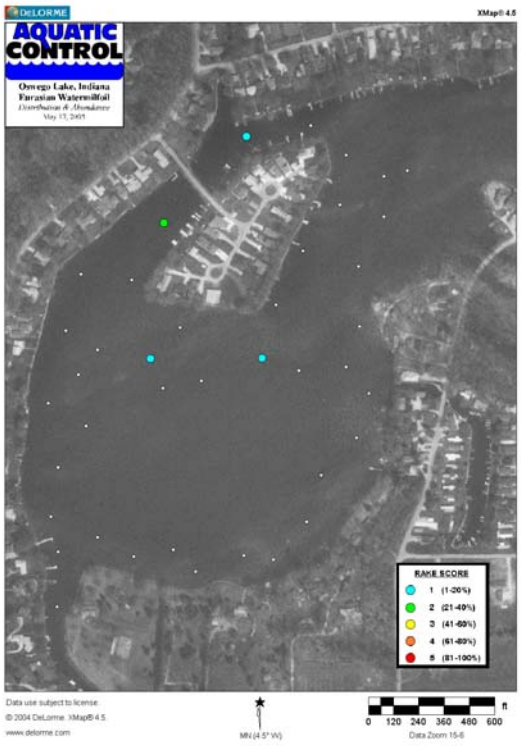

Figure 16. Oswego Lake, Eurasian watermilfoil distribution and abundance, May 17, 2005

August Tier II survey, Oswego Lake

The second round of Tier II sampling took place on August 8, 2005. A Secchi disk reading was taken prior to sampling and was found to be 5.5 feet. Plants were present to a maximum of 19 feet. The same forty sites were sampled in August as were in May. Results of the sampling are listed in Table 4. Overall aquatic vegetation distribution and density is illustrated in Figure 17. The bottom half of Table 4 illustrates the frequency of occurrence, relative density, mean density, and dominance index of individual species collected from Oswego Lake August 8, 2005.

Table 4. Occurrence and abundance of submersed aquatic plants in Oswego Lake, August 2, 2005

Date:	8/8/2005		Littoral sites with plants:	35		Species diversity:	0.85
Littoral depth (ft):	19		Number of species:	16		Native diversity:	0.84
Littoral sites:	37		Maximum species/site:	6		Rake diversity:	0.83
Total sites:	40		Mean number species/site:	2.15		Native rake diversity:	0.82
Secchi:	5.5		Mean native species/site:	2.08		Mean rake score:	3.17

Common Name	Site frequency	Relative density	Mean density	Dominance
Eel grass	59.5	0.95	1.59	18.9
Chara	51.4	1.08	2.11	21.6
Coontail	37.8	0.81	2.14	16.2
Spiny Naiad	13.5	0.14	1.00	2.7
Sago pondweed	13.5	0.30	2.20	1.6
Small pondweed	8.1	0.08	1.00	1.6
Richardson's pondweed	8.1	0.08	1.00	1.6
Flatstem pondweed	8.1	0.11	1.33	2.2
Eurasian watermilfoil	5.4	0.05	1.00	5.4
Northern watermilfoil	5.4	0.05	1.00	5.4
Whorled watermilfoil	5.4	0.16	3.00	3.2
Curlyleaf pondweed	2.7	0.03	1.00	0.5
Bladderwort	2.7	0.03	1.00	0.5

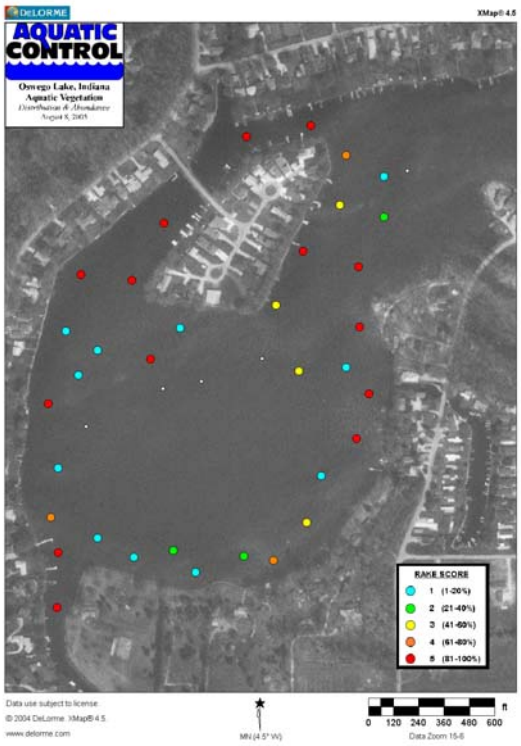

Figure 17. Oswego Lake, aquatic vegetation distribution and abundance, August 2, 2005.

A total of 16 species were collected of which 14 of the species were native. Eurasian watermilfoil and curlyleaf pondweed were the only exotic species collected. Eel grass was present at the highest percentage of sample sites (55%) but ranked second in relative density (Figure 18). Chara ranked second in site frequency (47%), but ranked first in relative density. Coontail ranked third in site frequency (35%), but was ranked forth in relative density (Figure 19). Spiny naiad ranked fourth in site frequency (12%), but ranked seventh in relative density. Northern watermilfoil, flatstem pondweed, sago pondweed, Richardson's pondweed, southern naiad, Eurasian watermilfoil, curlyleaf pondweed, small pondweed, whorled watermilfoil, and bladderwort were all present but at lower density and abundance. Location and density of Eurasian watermilfoil is illustrated in Figure 20 and curlyleaf pondweed is illustrated in Figure 21.

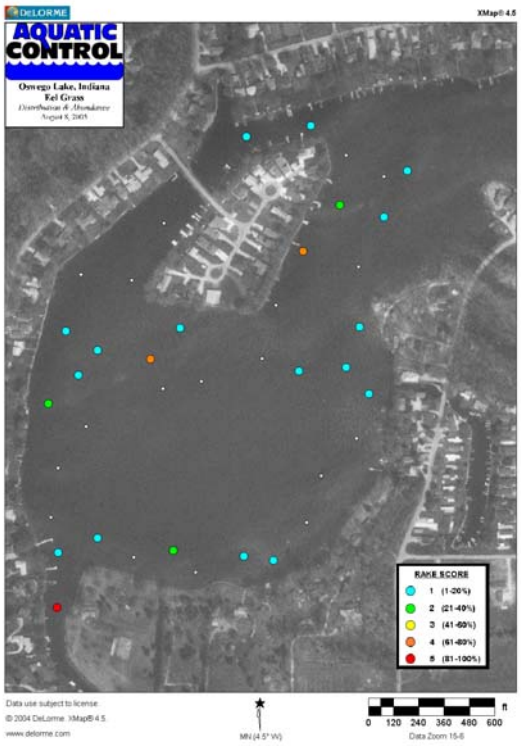

Figure 18. Oswego Lake, eel grass distribution and abundance, August 2, 2005.

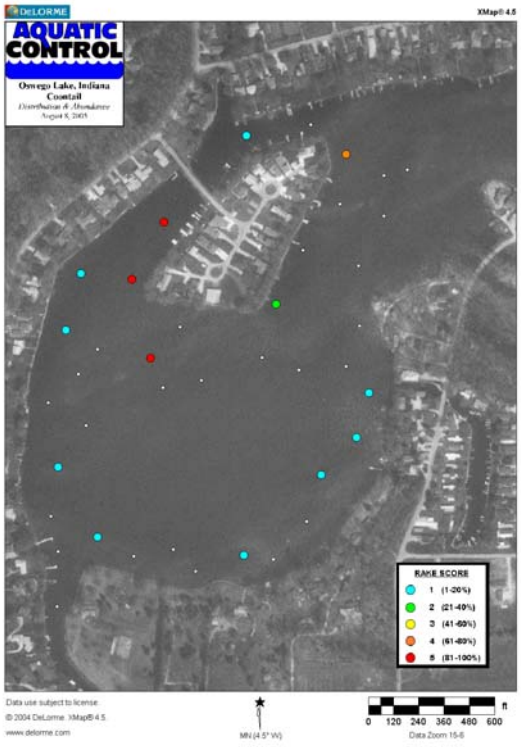

Figure 19. Oswego Lake, coontail distribution and abundance, August 2, 2005.

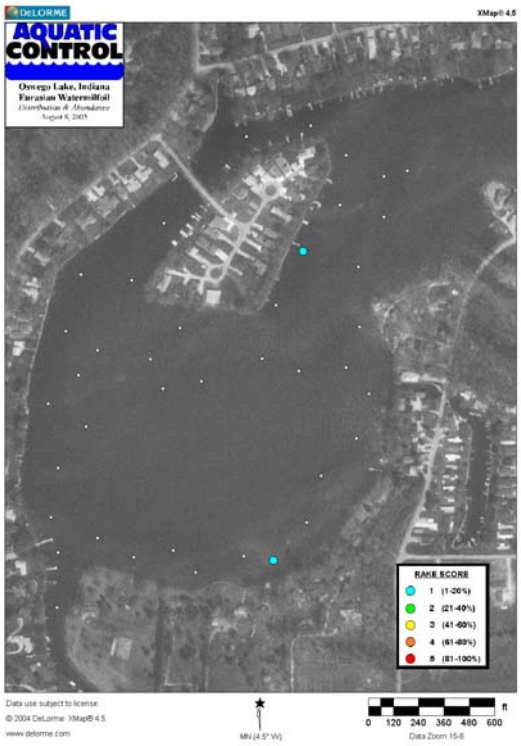

Figure 20. Oswego Lake, Eurasian watermilfoil distribution and abundance, August 2, 2005

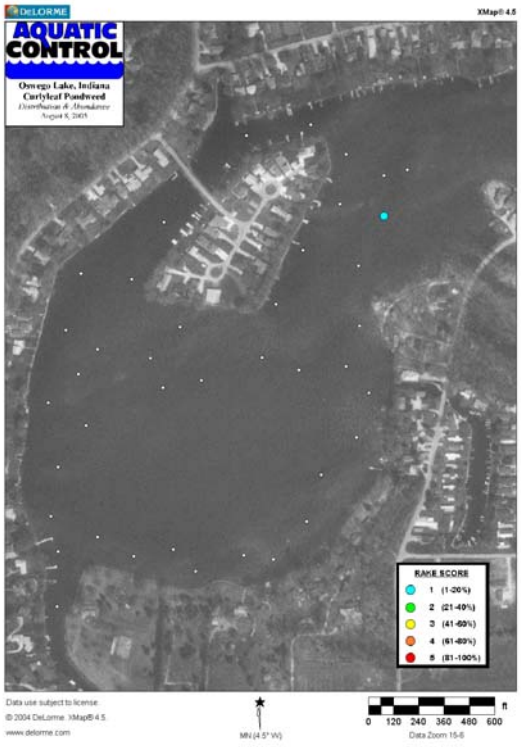

Figure 21. Oswego Lake, curlyleaf pondweed distribution and abundance, August 2, 2005

May Tier II survey, James Lake

On May 17, 2005 a tier II survey was completed on James Lake. A Secchi disk reading was taken prior to sampling and was found to be 16 feet. Plants were present to a maximum depth of 15 feet. Sixty-two sites were randomly selected within the littoral zone. Results of the sampling are listed in Table 4 and overall aquatic vegetation distribution and density is illustrated in Figure 22.

Table 5. Occurrence and abundance of submersed aquatic plants in James Lake, May 17, 2005.

Date:	5/17/2005		Littoral sites with plants:	51		Species diversity:	0.83
Littoral depth (ft):	15		Number of species:	9		Native diversity:	0.74
Littoral sites:	58		Maximum species/site:	5		Rake diversity:	0.82
Total sites:	64		Mean number species/site:	1.95		Native rake diversity:	0.72
Secchi:	16		Mean native species/site:	1.19		Mean rake score:	2.75

Common Name	Site frequency	Relative density	Mean density	Dominance
Curlyleaf pondweed	48.3	0.79	1.64	15.9
Coontail	48.3	0.93	1.93	18.6
Chara	36.2	0.64	1.76	12.8
Eurasian watermilfoil	36.2	0.50	1.38	10.0
Flatstem pondweed	20.7	0.21	1.00	4.1
Elodea	17.2	0.36	2.10	7.2
Whorled watermilfoil	5.2	0.05	1.00	1.0
Water stargrass	1.7	0.09	5.00	1.7
Eel grass	1.7	0.02	1.00	0.3

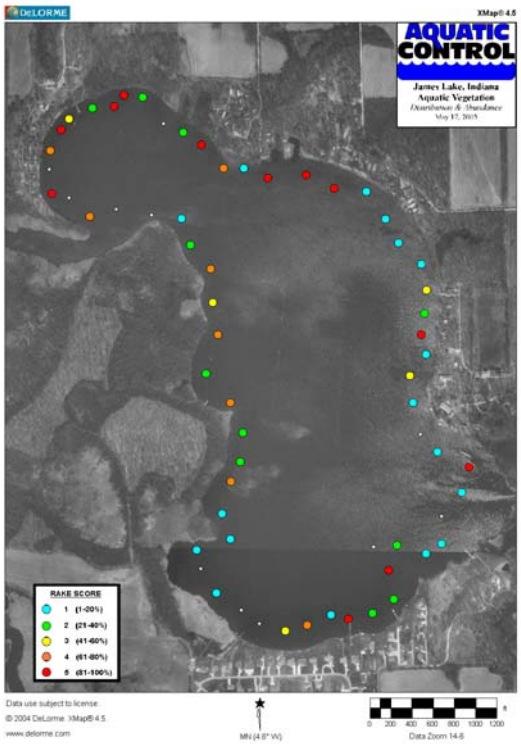

Figure 22. James Lake, aquatic vegetation distribution and abundance, May 17, 2005.

A total of nine species were collected of which two of the species were exotics, curlyleaf pondweed and Eurasian watermilfoil. Curlyleaf pondweed was present at the highest percentage of sample sites (43%) but ranked second in relative density (Figure 23). Coontail ranked second in site frequency (43%) but ranked first in relative density (Figure 24). Chara ranked third in site frequency (32%) and relative density (Figure 25). Eurasian watermilfoil ranked fourth in site frequency (32%) and relative density. Location and density of Eurasian watermilfoil is illustrated in Figure 26. Flatstem pondweed, elodea, whorled watermilfoil, water stargrass, and eel grass where also observed in lower percentages for site frequency and relative density.

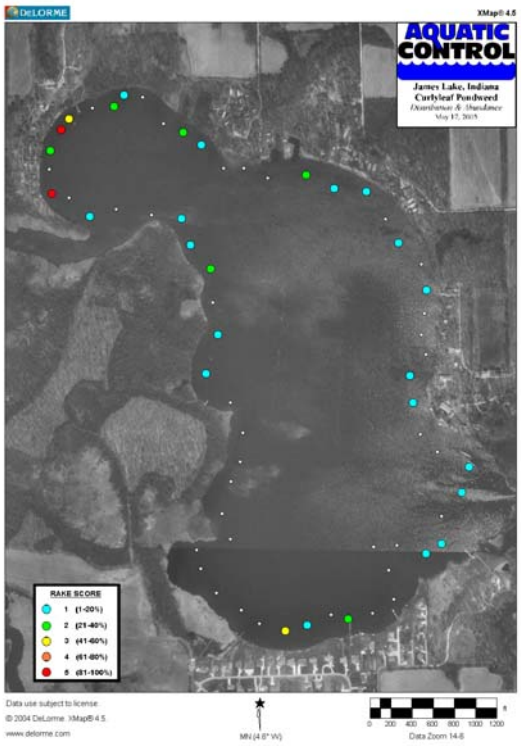

Figure 23. James Lake, curlyleaf pondweed distribution and abundance, May 17, 2005

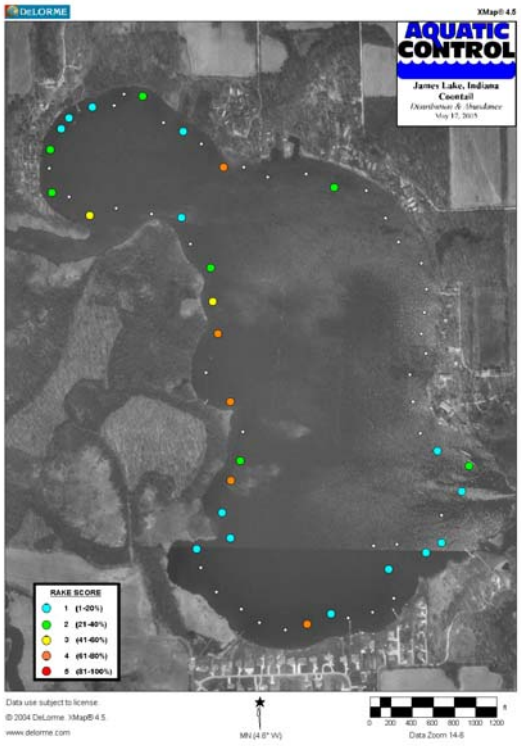

Figure 24. James Lake, coontail distribution and abundance, May 17, 2005

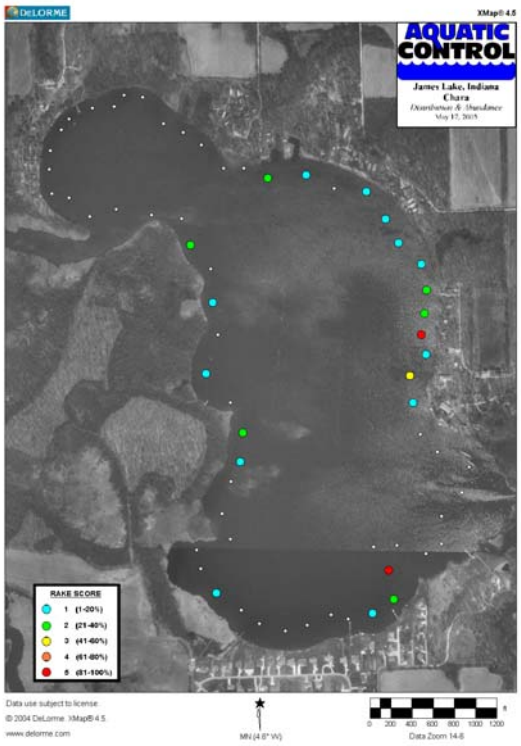

Figure 25. James Lake, chara distribution and abundance, May 17, 2005

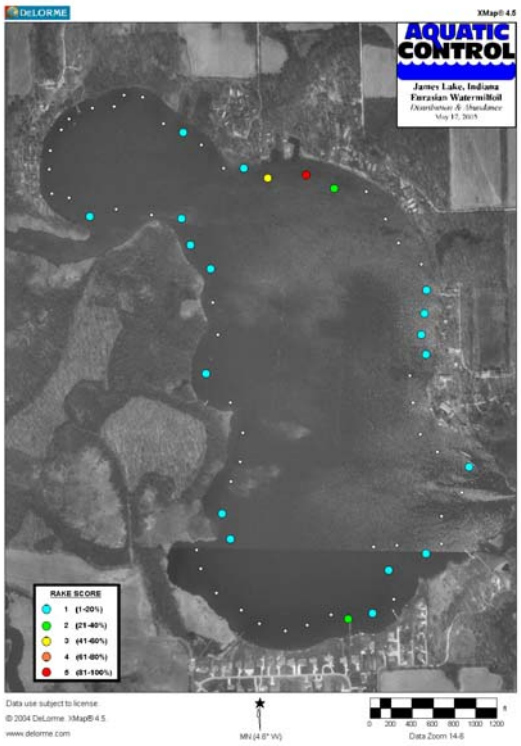

Figure 26. James Lake, Eurasian watermilfoil distribution and abundance, May 17, 2005

August Tier II survey, James Lake

The second round of tier II sampling took place on August 9, 2005. A Secchi disk reading was taken prior to sampling and was found to be 9 feet. Plants were present to a maximum of 23 feet. The same sixty-four sites were sampled in August as were in May. Results of the sampling are listed in Table 5 and overall aquatic vegetation distribution and density is illustrated in Figure 27. The bottom half of Table 5 illustrates the frequency of occurrence, relative density, mean density, and dominance index of individual species collected from James Lake August 9, 2005.

Table 6. Occurrence and abundance of submersed aquatic plants in James Lake, August 9, 2005.

Date:	8/9/2005		Littoral sites with plants:	56		Species diversity:	0.79
Littoral depth (ft):	23		Number of species:	14		Native diversity:	0.79
Littoral sites:	63		Maximum species/site:	4		Rake diversity:	0.69
Total sites:	64		Mean number species/site:	1.61		Native rake diversity:	0.69
Secchi:	9		Mean native species/site:	1.59		Mean rake score:	3.29

Common Name	Site frequency	Relative density	Mean density	Dominance
Coontail	54.70	1.78	3.26	35.60
Eel grass	37.50	0.63	1.67	12.50
Chara	28.10	0.73	2.61	14.70
Slender naiad	12.50	0.19	1.50	3.80
Elodea	6.30	0.06	1.05	1.30
Flatstem pondweed	4.70	0.05	1.00	0.90
Water stargrass	3.10	0.03	1.00	0.60
Southern naiad	3.10	0.03	1.00	0.60
Northern watermilfoil	3.10	0.03	1.00	0.60
Whorled watermilfoil	1.60	0.02	1.00	0.30
Richardson's pondweed	1.60	0.02	1.00	0.30
Duckweed sp.	1.60	0.02	1.00	0.30
Small pondweed	1.60	0.08	5.00	1.60
Eurasian watermilfoil	1.60	0.02	1.00	0.30

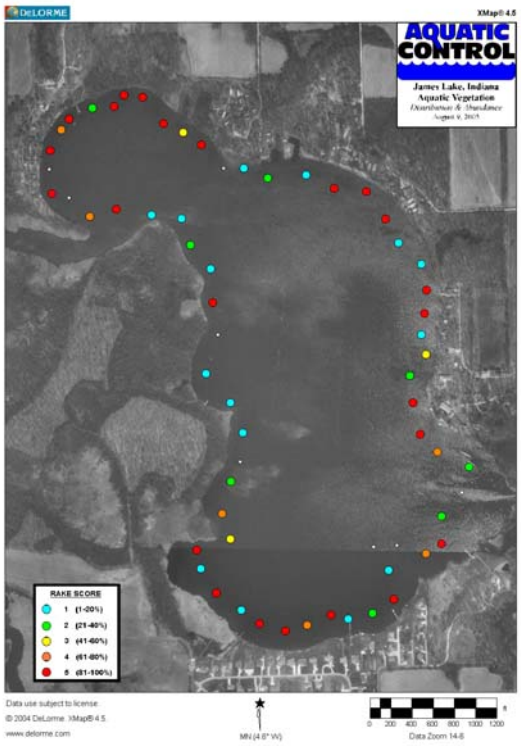

Figure 27. James Lake, aquatic vegetation distribution and abundance, August 9, 2005.

A total of 14 species were collected of which 13 of the species were native. Eurasian watermilfoil was the only exotic species collected. Coontail was present at the highest percentage of sample sites (54%) and had the highest relative density (Figure 28). Eel grass ranked second in site frequency (37%), but ranked third in relative density (Figure 29). Chara ranked third in site frequency (28%), but ranked second in relative density. Slender naiad, elodea, flatstem pondweed, water stargrass, southern naiad, northern watermilfoil, whorled watermilfoil, Richardson's pondweed, and greater duckweed were also collected, but at a lower abundance and density. Eurasian watermilfoil ranked last in site frequency and relative density. Location and density of Eurasian watermilfoil is illustrated in Figure 30.

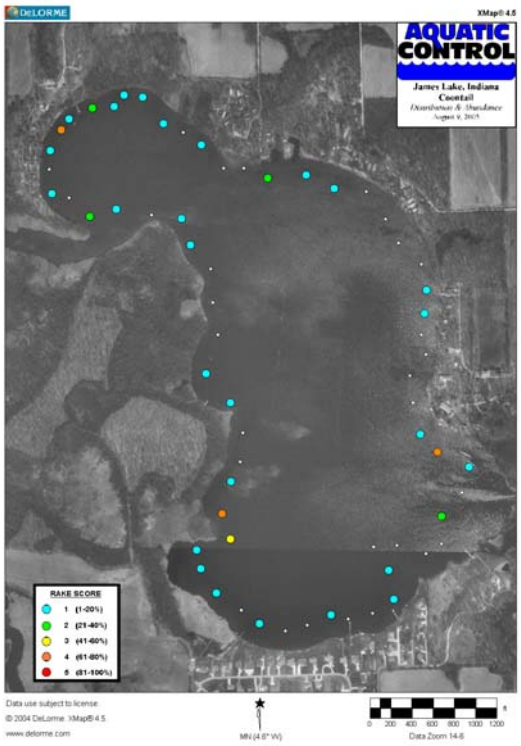

Figure 28. James Lake, coontail distribution and abundance, August 8, 2005

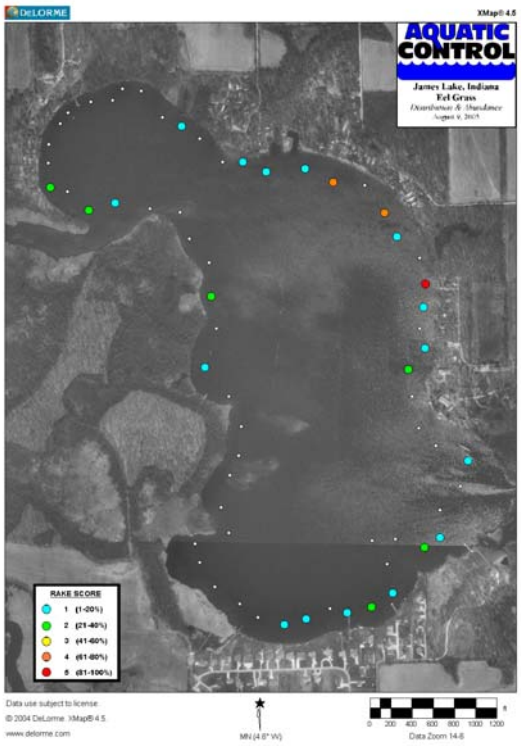

Figure 29. James Lake, eelgrass distribution and abundance, August 8, 2005

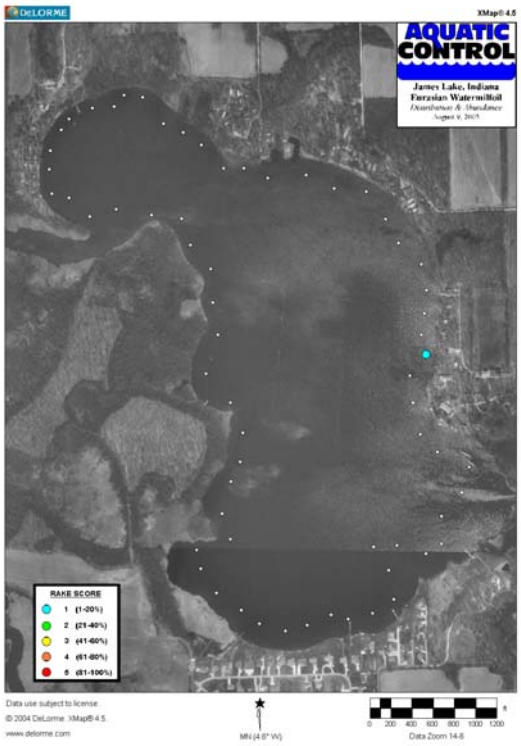

Figure 30. James Lake, Eurasian watermilfoil distribution and abundance, August 8, 2005

Plant Sampling Discussion

The LTPOA membership includes residents from all three lakes in the Tippecanoe Chain. These lakes are all connected to one another, but there are many differences in water quality, average depth, and shoreline development. These difference lead to variation in plant communities, and thus the plant sampling and sampling discussion focuses on the individual lakes.

Lake Tippecanoe Sampling Discussion

Lake Tippecanoe is the deepest natural lake in Indiana. This fact limits the amount of nuisance vegetation growth. However, there are dense beds of vegetation growing near shore and in high-use areas. This vegetation often leads to nuisance conditions. In the past, Eurasian watermifoil, curlyleaf pondweed, and eel grass have reached nuisance levels. Since 2003, the focus of LTPOA sponsored controls has been on this vegetation, primarily Eurasian watermilfoil. These treatments were completed with Renovate herbicide to selectively control milfoil while allowing native vegetation to replace the nuisance exotic species. These treatments were completed in order to meet the plant management goals of the association, which are to reduce nuisance conditions caused primarily by exotic species, while preserving and enhancing the native plant community. The sampling results appear to show that native vegetation has been preserved even while actively controlling nuisance exotics. This fact is illustrated in Figures 31-33, which shows an increase in native species abundance and diversity.

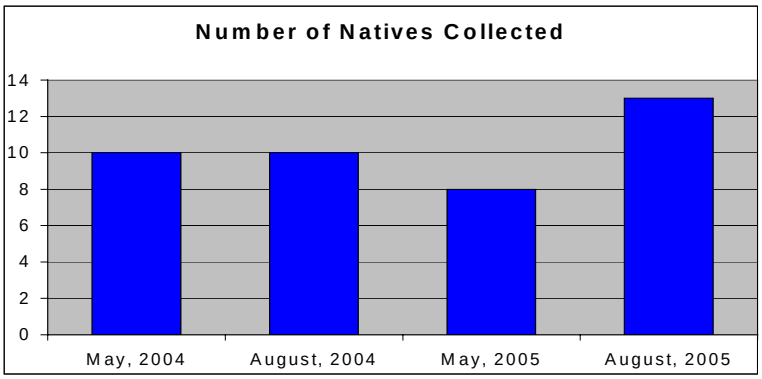

Figure 31. Lake Tippecanoe, comparison of the number of native species collected in the last four surveys.

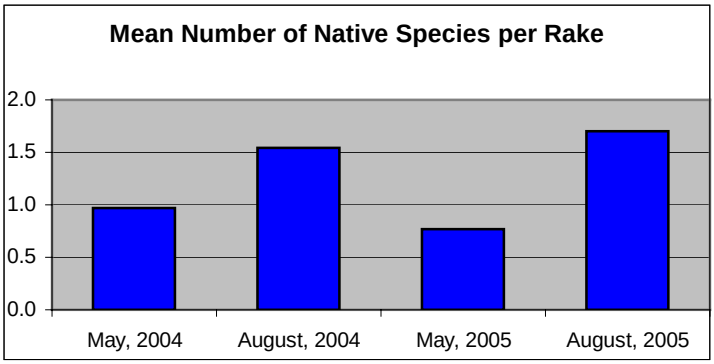

Figure 32. Lake Tippecanoe, comparison of number of native species per rake in the last four surveys.

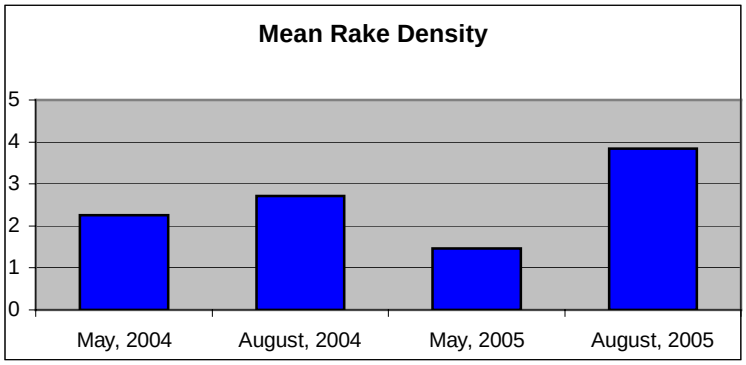

Figure 33. Lake Tippecanoe, comparison mean rake density in the last four surveys.

There appears to have been a significant decline in Eurasian watermilfoil density and abundance on Lake Tippecanoe since the spring of 2004 (Figure 34 & 35). This may be a result of actively treating Eurasian watermilfoil with systemic herbicides. The reduction in Eurasian watermilfoil is likely having a positive effect on the diversity and density of native plant species.

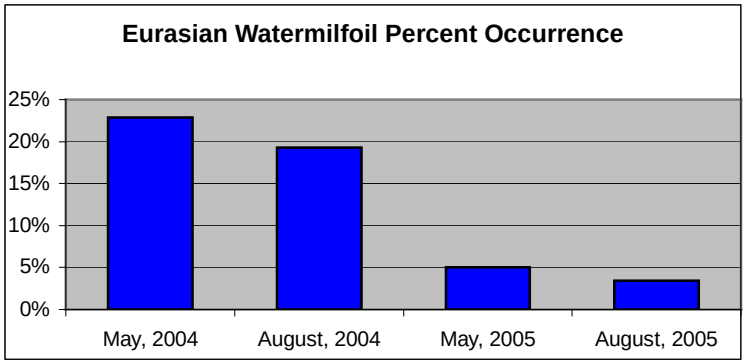

Figure 34. Lake Tippecanoe, Eurasian watermilfoil percent occurrence in the last four surveys.

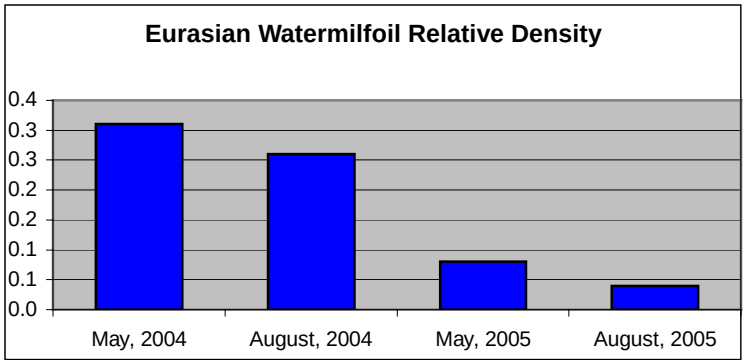

Figure 35. Lake Tippecanoe, Eurasian watermilfoil relative density in the last four surveys.

Curlyleaf pondweed continues to be a nuisance species in the spring and early summer. This species has been treated in areas where it occurred along with milfoil. However, these treatments were completed too late in the season to achieve any significant long-term control (treatments have taken place in late May, by this time curlyleaf pondweed has already produced its reproductive structures). Figures 36 and 37 illustrate the trends in curlyleaf pondweed over the last two seasons. It appears that density and abundance has dropped slightly over that time period. It is not clear why this perceived trend is taking place.

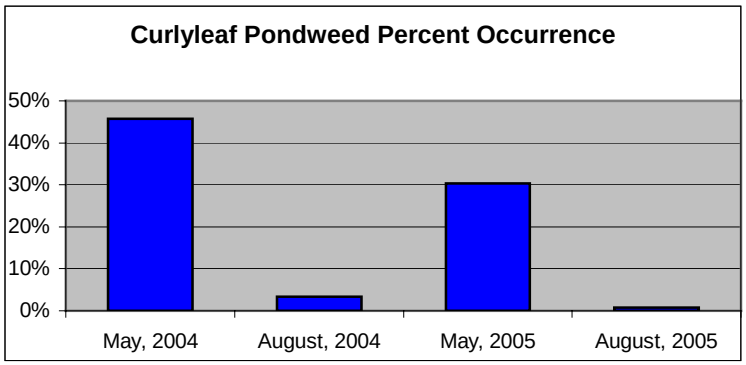

Figure 36. Lake Tippecanoe, curlyleaf pondweed percent occurrence in the last four surveys.

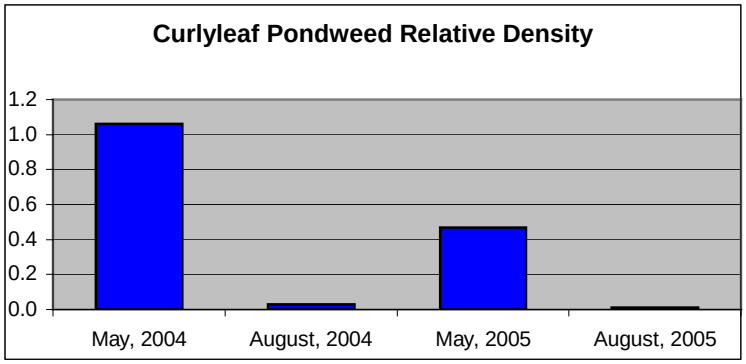

Figure 37. Lake Tippecanoe, curlyleaf pondweed relative density in the last four surveys.

Eel grass continues to be dense and abundant in late summer. This species is desired by fisheries and wildlife biologist as excellent fish cover and food for waterfowl. Understandably, there are restrictions on the amount of treatment that can be completed on this species.

Oswego Lake Sampling Discussion

Oswego Lake is much shallower that Lake Tippecanoe and thus tends to develop more nuisance conditions caused by aquatic vegetation. Eurasian watermilfoil and curlyleaf pondweed are the primary causes of these conditions. Over the last three years, Oswego Lake has received the largest percentage of LTPOA sponsored selective vegetation treatments. Over the last three years, these treatments have effectively reduced nuisance conditions and appear to have enhanced the native plant community. Figures 38-40 graphically illustrate the changes in the native plant community.

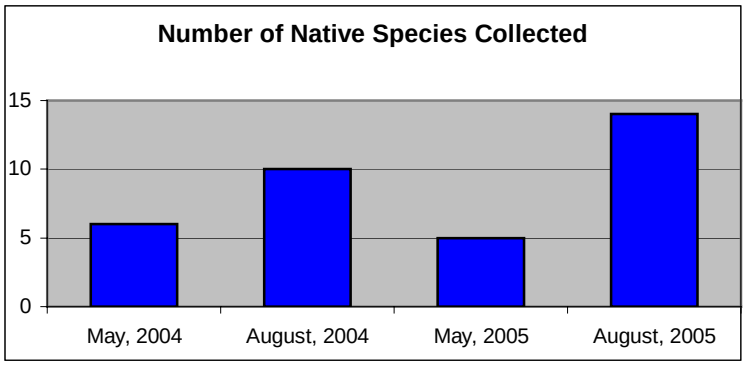

Figure 38. Oswego Lake, comparison of the number of native species collected in the last four surveys.

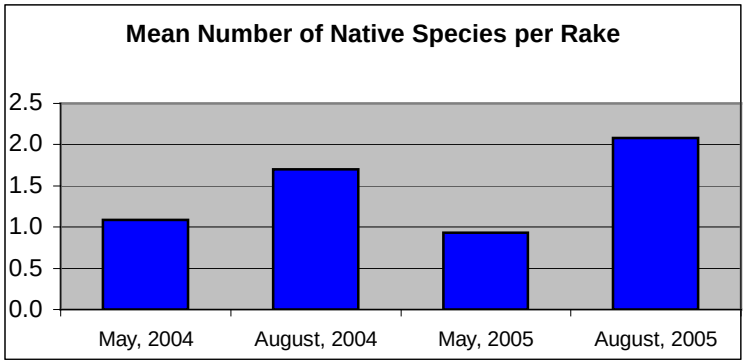

Figure 39. Oswego Lake, comparison of mean number of native species per rake in the last four surveys.

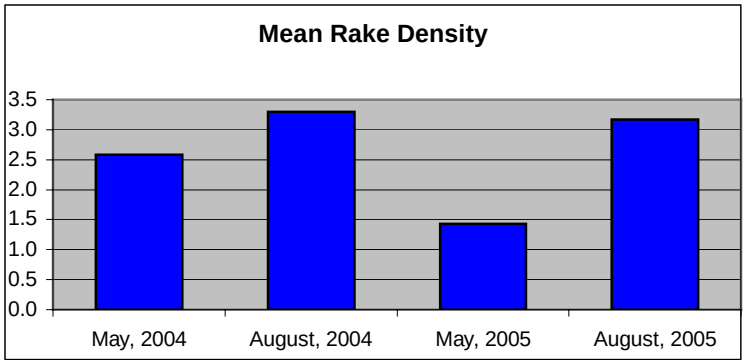

Figure 40. Oswego Lake, comparison mean rake density in the last four surveys.

There appears to have been a significant decline in Eurasian watermilfoil density and abundance on Oswego Lake since the spring of 2004 (Figure 41 & 42). This is likely the result of actively treating Eurasian watermilfoil with systemic herbicides. The reduction in Eurasian watermilfoil is likely having a positive effect on the diversity and density of native plant species.

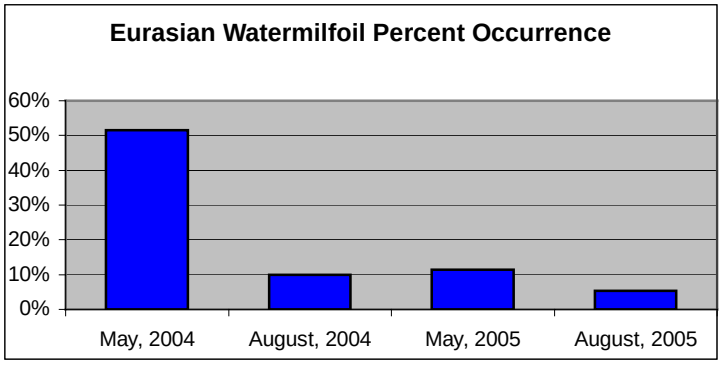

Figure 41. Oswego Lake, Eurasian watermilfoil percent occurrence in the last four surveys.

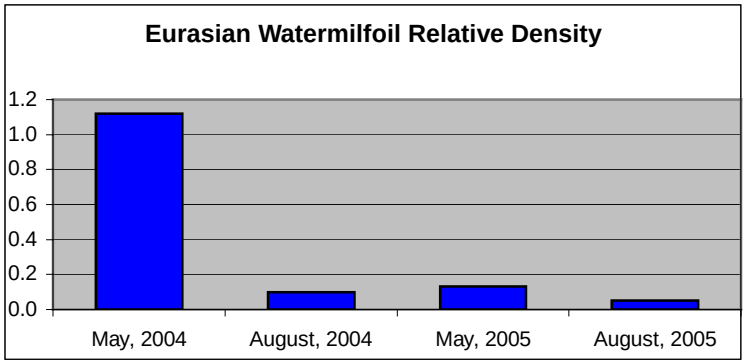

Figure 42. Oswego Lake, Eurasian watermilfoil relative density in the last four surveys.

Much like on Lake Tippecanoe, curlyleaf pondweed continues to be a nuisance species in the spring and early summer on Oswego Lake. Figures 43 and 44 illustrate the trends in curlyleaf pondweed over the last two seasons. It appears that density and abundance has dropped slightly over that time period. It is not clear why this perceived trend is taking place.

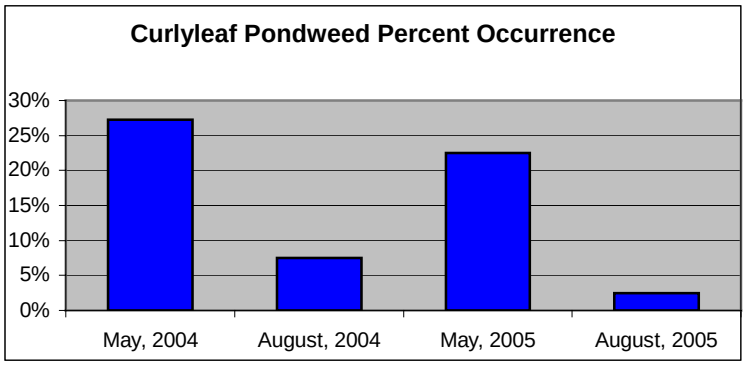

Figure 43. Oswego Lake, curlyleaf pondweed percent occurrence in the last four surveys.

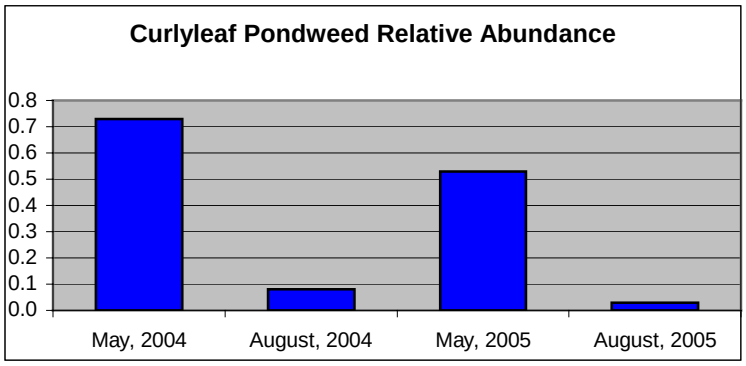

Figure 44. Oswego Lake, curlyleaf pondweed relative density in the last four surveys.

James Lake Sampling Discussion

In 2003 and 2004, there was very little impairment on James Lake created by nuisance exotic species, to the point that no LTPOA sponsored treatments were completed (Aquatic Control only treated milfoil in the most impaired areas due to a limited LTPOA budget, James Lake had milfoil but not to the extent of the other two lakes). However, in 2005 it appeared that the lack of treatments allowed Eurasian watermilfoil to spread, and a large percentage of the lake was treated with Renovate herbicide. Eurasian watermilfoil decreased significantly following May treatments (Figures 45 & 46).

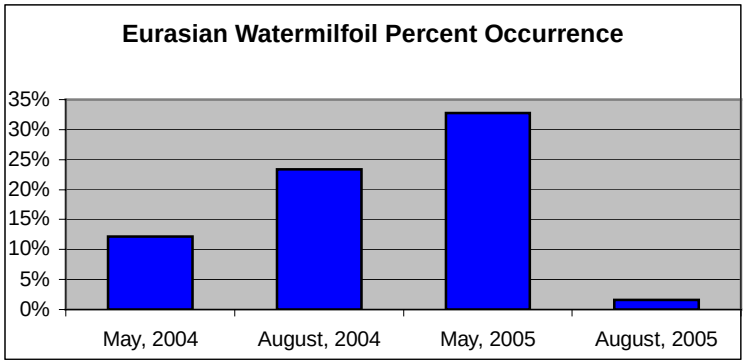

Figure 45. James Lake, Eurasian watermilfoil percent occurrence in the last four surveys.

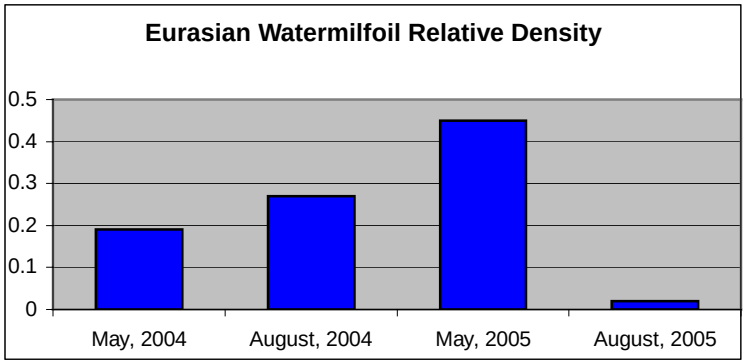

Figure 46. James Lake, Eurasian watermilfoil relative density in the last four surveys.

There appeared to be no negative effect on native vegetation following spring herbicide applications. This is illustrated in Figures 47-49, which show little significant change in the plant community over the last four surveys. Continued milfoil control may actually help increase the diversity metrics by reducing competition.

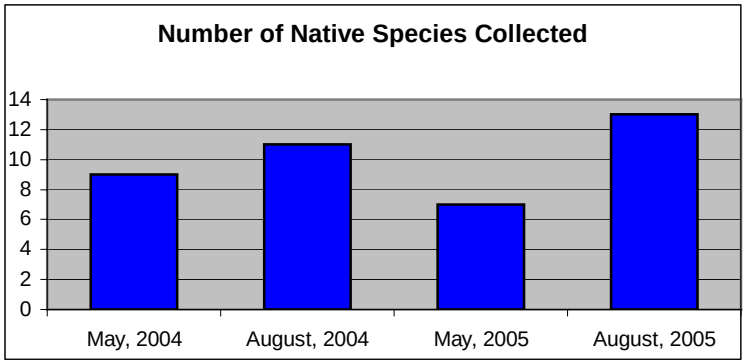

Figure 47. James Lake, number of species collected in the last four surveys.

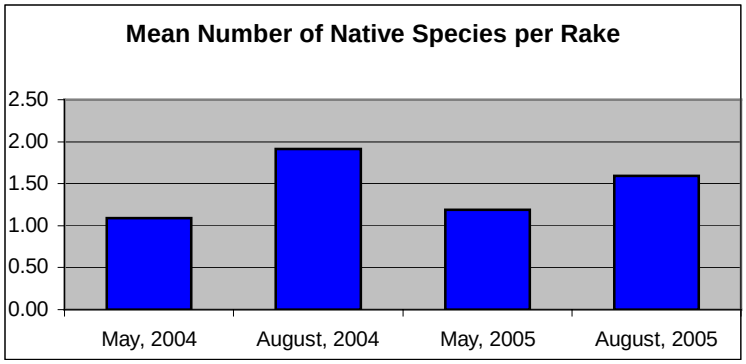

Figure 48. James Lake, mean number of native species per rake in the last four surveys.

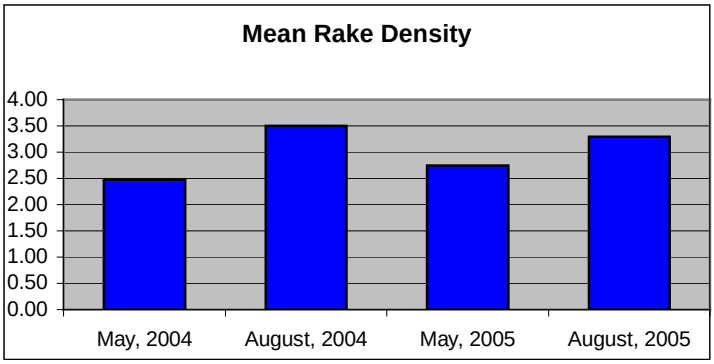

Figure 49. James Lake, mean rake density in the last four surveys.

Much like the other two lakes, curlyleaf pondweed creates nuisance conditions in the spring and early summer. This species may also be limiting or reducing native species abundance and diversity by competing with these species. Figures 50 and 51 graphically illustrate the density and abundance of this species in the last four surveys.

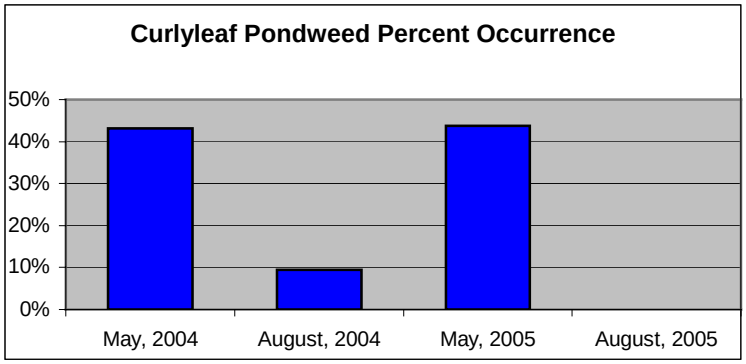

Figure 50. James Lake, curlyleaf pondweed percent occurrence in the last four surveys.

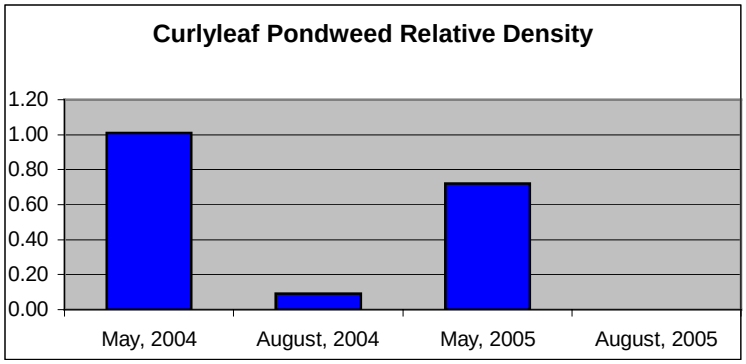

Figure 51. James Lake, curlyleaf pondweed relative density in the last four surveys.

2005 VEGETATION CONTROL

In general, the goal of the vegetation management plan is to control nuisance aquatic species, with a focus on exotic nuisance plants, while preserving and enhancing beneficial native vegetation. For the past three seasons, LTPOA has funded treatment of Eurasian watermilfoil in main lake areas. Treatment areas were chosen by Aquatic Control plant managers following spring surveys. Only the densest areas of milfoil were treated (ideally, LTPOA would fund the treatment of all areas of milfoil, but due to a limited budget it was left up to Aquatic Control to select the most impaired areas for treatment). In 2003 and 2004 these treatments focused primarily on Oswego Lake with some scattered areas in Lake Tippecanoe. James Lake was not treated in 2003 and 2004, even though there was some milfoil present. In 2003 and 2004 it was determined that Oswego and Tippecanoe had more impaired areas. By the 2005 spring survey, it became apparent that long-term control was being achieved on Oswego and Lake Tippecanoe (see Figures 34, 35, 41, & 42). There were still some small nuisance patches, but overall there was a significant reduction in Eurasian watermilfoil density and abundance. However, milfoil was rapidly spreading in James Lake where no treatments had been completed (see Figures 45 & 46). On May 24, 2005 a total of 10.0 acres of Eurasian watermilfoil was treated on James Lake, 7.5 acres on Lake Tippecanoe, and 4.0 acres on Oswego (Figure 52). Renovate herbicide was used to treat the milfoil and a low dose of Aquathol K was also added to treat curlyleaf pondweed that was also present within the

milfoil beds (if the treatments only focused on milfoil then when the plants dropped out they may have been quickly replaced by curlyleaf pondweed). These treatments were considered successful (personal communication and observation, 2005)

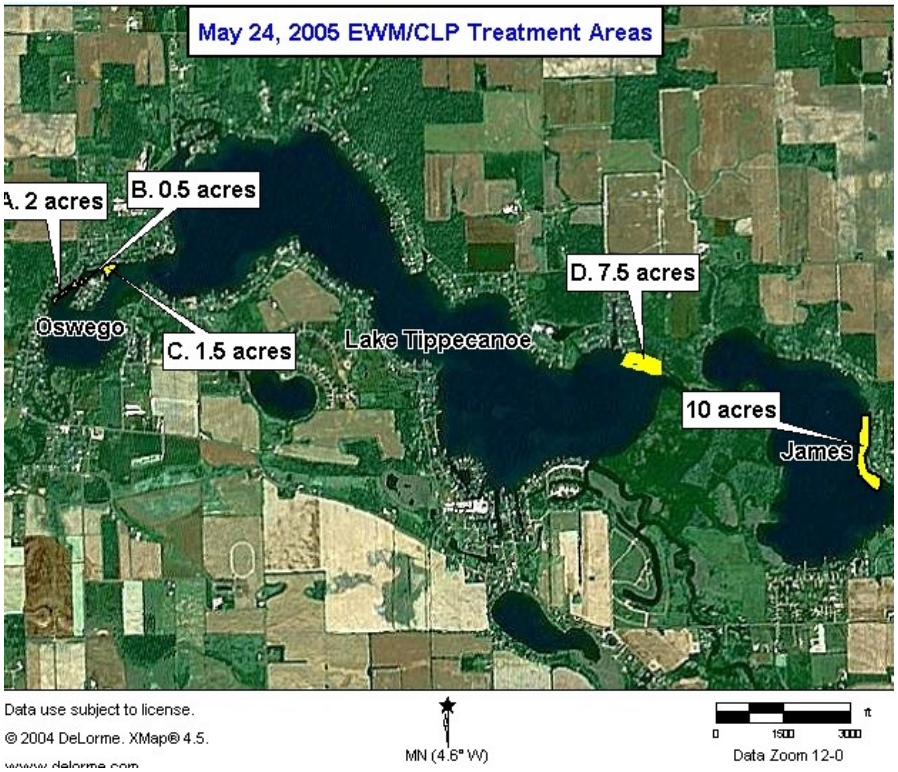

Figure 52. Lake Tippecanoe, Eurasian watermilfoil and curlyleaf pondweed treatment areas, May 24, 2005

Along with the mixed milfoil/curlyleaf pondweed treatments, in 2005 there were areas on Oswego that were only treated with Aquathol K for control of curlyleaf pondweed (Figure 53). This species appeared to have replaced the dense milfoil beds that were present in the same areas in 2004. This treatment was strictly to reduce nuisance conditions. There will likely be no long-term benefits from treating curlyleaf pondweed this late in the season.

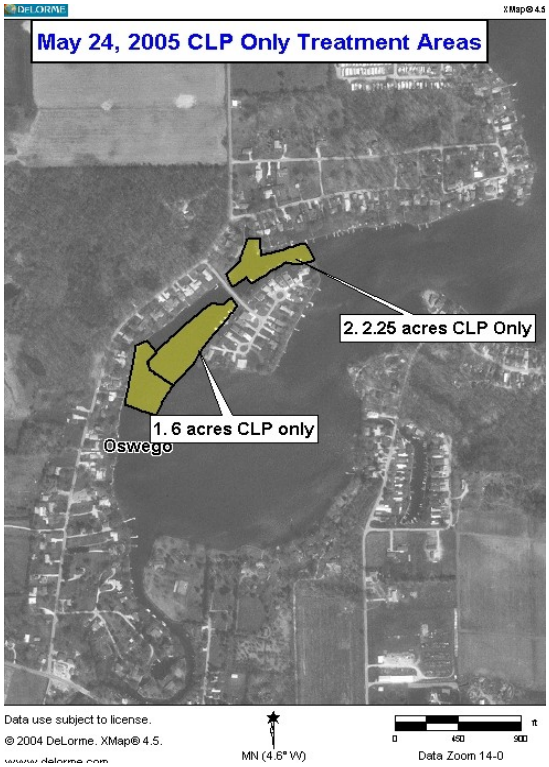

Figure 53. Oswego Lake, curlyleaf pondweed only treatment areas, May 24, 2005.

LTPOA also contracted Aquatic Control to complete treatment of nuisance areas of eel grass in late summer. In July, LTPOA representatives, IDNR representatives, and Aquatic Control plant managers visually inspected traditionally nuisance eel grass areas. IDNR approved treatment of 4.0 acres of eel grass. Treatment was completed on July 27 and is illustrated in Figure 54. Nautique herbicide was used in this treatment.

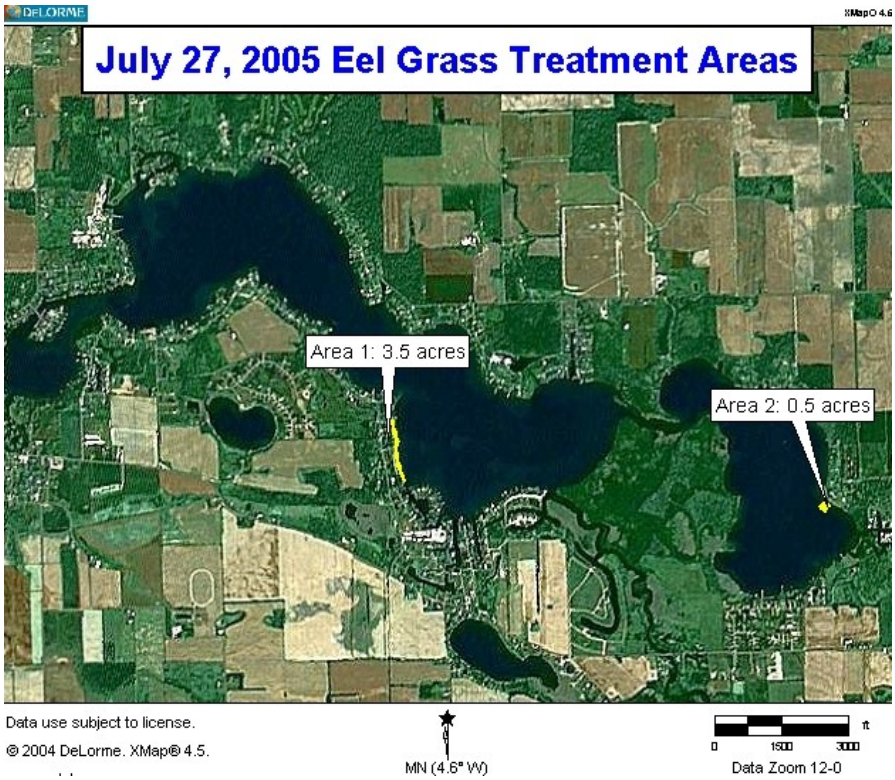

Figure 54. Lake Tippecanoe Chain, eel grass treatment areas, July 27, 2005.

ACTION PLAN AND BUDGET UPDATE

The 2005 vegetation management plan recommended treatment of Eurasian watermilfoil everywhere it occurred within the three lakes. However, due to miscommunication, the grant application did not get filled out in time and no funding was awarded for vegetation controls. The Association could not afford to treat this species everywhere it occurred, so only the worst areas were treated. Due to previous proactive actions taken by the Association, the milfoil population was much lower in 2005 when compared to previous years (this was likely a combination of aggressive treatment with systemic herbicides and unknown environmental factors). It appears that curlyleaf pondweed is taking the place of Eurasian watermilfoil in many areas where long-term milfoil control has occurred. In order to control this species, early season treatments should be completed to eliminate curlyleaf pondweed before it produces reproductive structures. These treatments should be completed in April, or when the water reaches 50 degrees. Aquathol K herbicide is the best product for the job (see Page 50 of the original plan for further discussion of this type of treatment). Based on spring sampling results and visual surveys, it is estimated that up to 84 acres of curlyleaf pondweed will require treatment on the Tippecanoe Chain (44 acres on Lake Tippecanoe, 28 acres on James, and 12 acres on Oswego). Figure 55 is an estimate of areas that may require treatment next season. This treatment should be completed for three consecutive seasons in order to reduce curlyleaf pondweed to a level that can be easily managed exclusively by the Association. Treatment areas should be mapped out with an early spring visual survey using GPS and a Delorme mapping system.

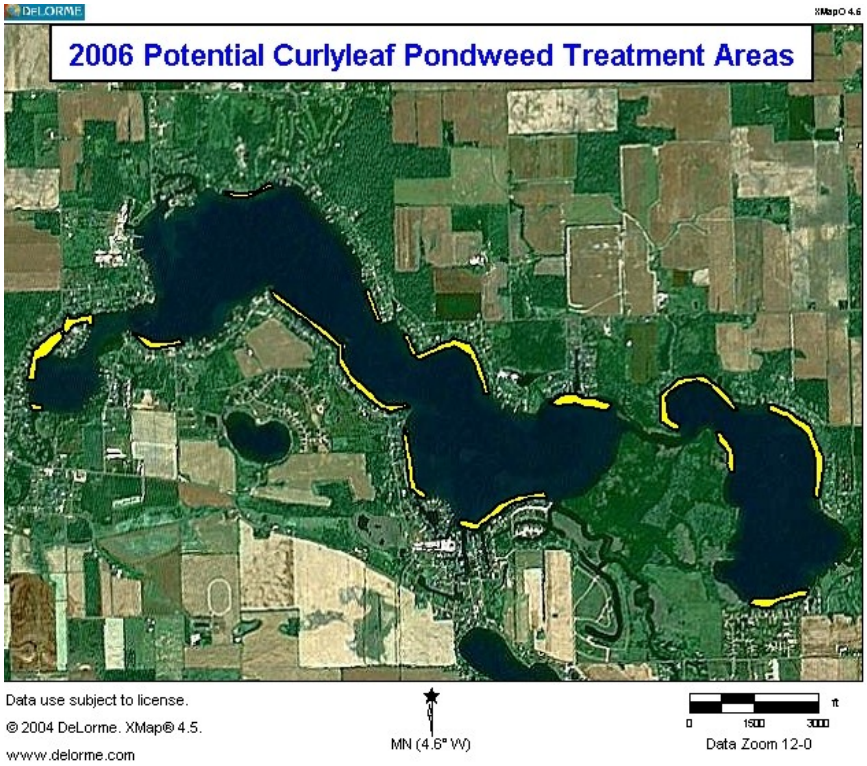

Figure 55. Tippecanoe Chain, potential curlyleaf pondweed treatment areas.

As previously discussed, LTPOA has been actively treating Eurasian watermilfoil for the last three seasons with Renovate herbicide. Sampling results indicate that long-term control of this species is being achieved. There has been a steady decline in Eurasian watermilfoil since the inception of the treatment program in 2003. However, this species should continue to be managed in order to keep it from returning to pre-2003 levels. Eurasian watermilfoil should be treated anywhere it occurs within the chain of lakes. Figure 56 is an educated guess as to where this species may occur in 2006. This figure was created by reviewing past sampling data and visual surveys. It is estimated that up to 37 acres may require treatment on the Tippecanoe Chain in 2006 (17 acres on Lake Tippecanoe, 12 acres on James, and 8 acres on Oswego). It is likely that less than 37 acres will require treatment in following seasons. In two to three years it may become difficult to find any Eurasian watermilfoil plants in the three lakes.

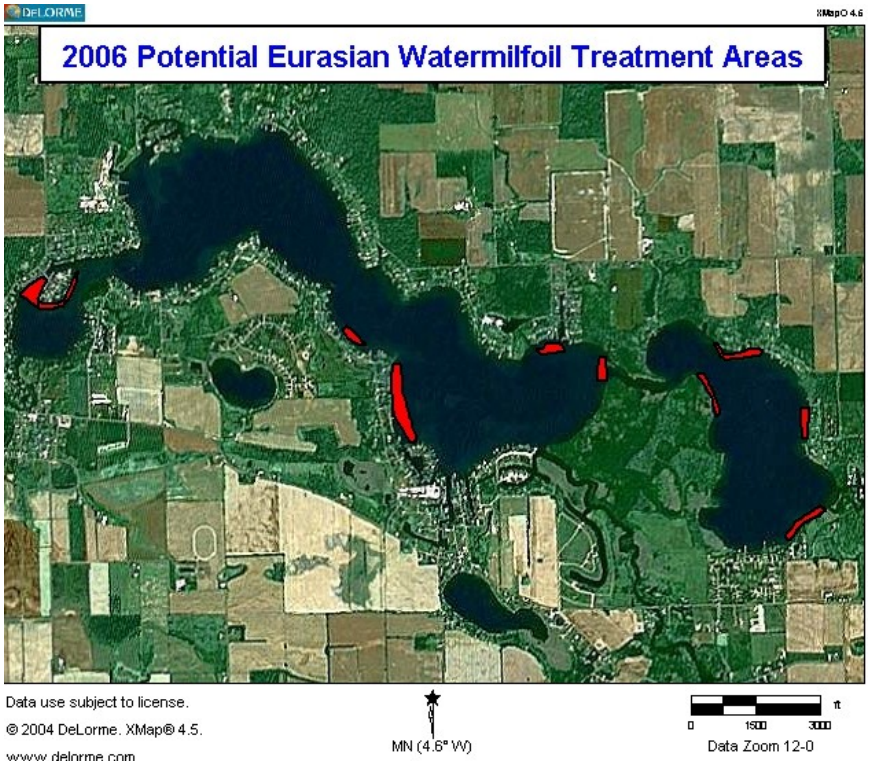

Figure 56. Tippecanoe Chain, potential Eurasian watermilfoil treatment areas.

Eel grass is a beneficial native species that typically reaches its maximum density in late summer. This species has created some nuisance conditions in the three lakes. Since 2004, LTPOA has treated some of the most impaired areas. These areas were only treated after inspections from the District Fisheries Biologist. Traditional treatment areas can be treated without inspection, but if LTPOA wishes to expand out of these areas additional inspections will be required. This treatment will not be eligible for funding by the LARE program. It is estimated that between 5-10 acres may require treatment next season.

Listed below is a budget estimate for vegetation controls over the next four seasons. The potential LARE funded items include the curlyleaf pondweed treatment, Eurasian watermilfoil treatment, and continued vegetation sampling (two tier II surveys per season during the same time as the 2004 and 2005 surveys and one tier I survey in late summer). LTPOA should request $48,025 from the LARE program. Treatment of eel grass will not be funded by LARE.

Table 7. Four year budget estimate for plant management on the Tippecanoe Chain.

	2006	2007	2008	2009
Curlyleaf pondweed treatment:	$27,300	$27,300	$27,300	$0
Eurasian watermilfoil treatment:	$15,725	$12,750	$8,500	$4,250
Eel grass treatment:	$3,750	$3,750	$3,750	$3,750
Plant sampling and plan update:	$5,000	$5,000	$5,000	$5,000
Eco-zone feasibility study:	$10,500	-	-	-
Total potentially funded by LARE:	**$58,025**	**$45,050**	**$40,800**	**$9,250**
Total funded by LTPOA (does not include 10% match):	**$3,750**	**$3,750**	**$3,750**	**$3,750**

In 2005, a filamentous blue-green algae problem developed along the eastern side of Lake Tippecanoe. The algae was blown into some coves and piers making boating difficult. Some residents hired professional applicators to complete treatment in order to open up boating lanes. This type of algae is very difficult to chemically control and often requires multiple maintenance treatments. The LARE program will not fund chemical algae treatments. It is the belief of many residents that the bluegreen algae problem is beginning in Grassy Creek and once it reaches Lake Tippecanoe it follows the prevailing winds and currents (the exact species and where it comes from should be confirmed with sampling in the summer of 2006). It is the recommendation of IDNR that the LTPOA attempt to create and ecozone along the eastern shoreline of Lake Tippecanoe (Figure 57). This area contains a shallow shelf that should grow beneficial emergent, rooted floating, and submersed vegetation. However, due to summer boat traffic, vegetation cannot establish in this area. It is theorized that if native vegetation is allowed to establish that this will help filter nutrients and floating algae thus preventing this species from creating nuisance conditions. This area, at one time, was also likely an excellent spawning and brood area for many game fish species in Lake Tippecanoe and protecting this ecosystem would be beneficial to fish production within the lakes. Creation of the eco-zone would entail buoying off the area, preventing high speed boating, and thus allowing native vegetation to return. It is recommended that LTPOA begin working to create an eco-zone in this area. An Eco-zone feasibility study should begin in the spring of 2006. The cost of this study has been included in the 2006 budget.

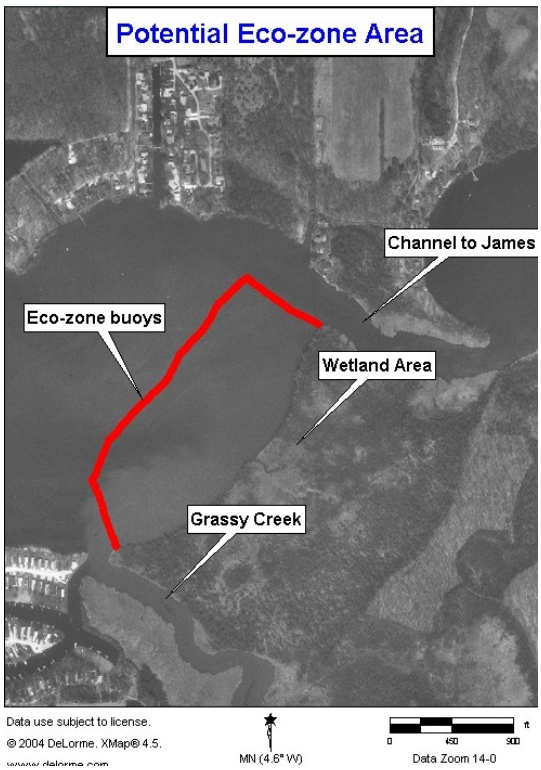

Figure 57. Lake Tippecanoe, potential eco-zone areas.

PUBLIC INVOLVEMENT

A public meeting was held on October 26, 2005 at the North Webster Community Center. This meeting was designed to gain further input from lake users, to educate lake users of the 2005 vegetation management activities, and to inform users of potential vegetation management plan updates. Approximately fifteen individuals were in attendance and ten of those individuals filled out a lake user survey form. All survey participants were lake property owners of which 60% lived on Lake Tippecanoe, 30% on James, and 10% on Oswego. Ninety percent of survey participants have lived on the lakes for more than 10 years. All individuals used the lake for boating and swimming, while 80% also used the lake for fishing. All individuals were in favor of continued vegetation control efforts. One of the main topics of concern was an increase in the amount of filamentous algae seen in 2006. The main areas of algae were on the eastern half of Lake Tippecanoe. It is believed that the algae is beginning in Grassy Creek and moving out into the lake.

Appendix Update-2005 Sampling Data

Lake Tippecanoe

Lake	Date	Latitude	Longitude	Site	Depth	RAKE	MYSP2	POCR3	CEDE4	CH?AR	VAAM3	POZO	PORI2	MYVE	ZODU	SpeNum	NatSpeNum
Tippecanoe	5/17/05	41.32815	-85.77733	41	5.0	2		1		1		1				3	2
Tippecanoe	5/17/05	41.32834	-85.77625	42	4.0	1				1						1	1
Tippecanoe	5/17/05	41.32872	-85.7748	43	8.0											0	0
Tippecanoe	5/17/05	41.32909	-85.7732	44	3.0	1				1						1	1
Tippecanoe	5/17/05	41.33021	-85.77304	45	5.0	1				1						1	1
Tippecanoe	5/17/05	41.33108	-85.77091	46	14.0	1			1							1	1
Tippecanoe	5/17/05	41.33143	-85.76993	47	3.0											0	0
Tippecanoe	5/17/05	41.33159	-85.76853	48	11.0											0	0
Tippecanoe	5/17/05	41.33067	-85.76768	49	6.0	1		1	1							2	1
Tippecanoe	5/17/05	41.3302	-85.76686	50	3.0											0	0
Tippecanoe	5/17/05	41.32972	-85.76624	51	20.0											0	0
Tippecanoe	5/17/05	41.32912	-85.76529	52	4.0	2		2				1				2	1
Tippecanoe	5/17/05	41.32879	-85.76427	53	19.0											0	0
Tippecanoe	5/17/05	41.32836	-85.76302	54	20.0											0	0
Tippecanoe	5/17/05	41.32776	-85.76267	55	3.0	1		1		1		1				3	2
Tippecanoe	5/17/05	41.32702	-85.76264	56	3.0	1		1								1	0
Tippecanoe	5/17/05	41.32624	-85.76229	57	5.0	2		2		1	1					3	2
Tippecanoe	5/17/05	41.32603	-85.76176	58	12.0	1		1				1				2	1
Tippecanoe	5/17/05	41.32555	-85.76147	59	5.0	3		3								1	0
Tippecanoe	5/17/05	41.32518	-85.76101	60	4.0	1		1				1				2	1
Tippecanoe	5/17/05	41.32512	-85.76047	61	15.0	1			1							1	1
Tippecanoe	5/17/05	41.32453	-85.75998	62	3.0											0	0
Tippecanoe	5/17/05	41.3243	-85.75889	63	3.0	4		4								1	0
Tippecanoe	5/17/05	41.32444	-85.75748	64	5.0	1		1								1	0
Tippecanoe	5/17/05	41.32462	-85.75697	65	16.0											0	0
Tippecanoe	5/17/05	41.32403	-85.75676	66	3.0	1		1			1					2	1
Tippecanoe	5/17/05	41.32337	-85.75703	67	5.0	1						1				1	1
Tippecanoe	5/17/05	41.32281	-85.7569	68	8.0											0	0
Tippecanoe	5/17/05	41.32234	-85.75732	69	4.0	1	1									1	0
Tippecanoe	5/17/05	41.32198	-85.75708	70	8.0	1		1	1			1				3	2
Tippecanoe	5/17/05	41.32149	-85.7572	71	3.0	1		1								1	0
Tippecanoe	5/17/05	41.32114	-85.75655	72	5.0	3		3				1				2	1
Tippecanoe	5/17/05	41.32091	-85.75586	73	7.0	1	1		1			1				3	2
Tippecanoe	5/17/05	41.32081	-85.75508	74	8.0											0	0
Tippecanoe	5/17/05	41.32024	-85.75543	75	7.0	2			1					2		2	2
Tippecanoe	5/17/05	41.31986	-85.75644	76	7.0	1			1					1		2	2
Tippecanoe	5/17/05	41.31984	-85.7571	77	3.0	1							1			1	1
Tippecanoe	5/17/05	41.31922	-85.75702	78	3.0	1							1	1		2	2
Tippecanoe	5/17/05	41.31901	-85.75577	79	8.0											0	0
Tippecanoe	5/17/05	41.31866	-85.75473	80	3.0	1				1						1	1
Tippecanoe	5/17/05	41.31882	-85.75352	81	16.0											0	0
Tippecanoe	5/17/05	41.318	-85.75345	82	7.0	1	1	1		1						3	1
Tippecanoe	5/17/05	41.31704	-85.75331	83	2.0	1								1		1	1
Tippecanoe	5/17/05	41.31673	-85.75218	84	4.0											0	0
Tippecanoe	5/17/05	41.31752	-85.75156	85	12.0	1		1	1							2	1
Tippecanoe	5/17/05	41.31758	-85.75031	86	3.0	1						1				1	1
Tippecanoe	5/17/05	41.31784	-85.74914	87	3.0	1									1	1	1
Tippecanoe	5/17/05	41.31856	-85.74865	88	3.0											0	0
Tippecanoe	5/17/05	41.31922	-85.74781	89	4.0	1						1				1	1
Tippecanoe	5/17/05	41.31982	-85.74728	90	7.0	4			3					1		2	2
Tippecanoe	5/17/05	41.31914	-85.74699	91	4.0											0	0
Tippecanoe	5/17/05	41.31861	-85.74638	92	2.0	1		1								1	0
Tippecanoe	5/17/05	41.31849	-85.74508	93	2.0											0	0
Tippecanoe	5/17/05	41.31928	-85.74476	94	4.0											0	0
Tippecanoe	5/17/05	41.31998	-85.7442	95	6.0											0	0
Tippecanoe	5/17/05	41.3199	-85.74311	96	5.0	1						1				1	1
Tippecanoe	5/17/05	41.31946	-85.74198	97	2.0	5		1	2			2		1		4	3
Tippecanoe	5/17/05	41.32006	-85.74082	98	3.0	3		1	1					1		3	2
Tippecanoe	5/17/05	41.3209	-85.74136	99	4.0	2	1	2				1				3	1
Tippecanoe	5/17/05	41.32103	-85.74267	100	6.0											0	0
Tippecanoe	5/17/05	41.32139	-85.74387	101	17.0	1		1								1	0
Tippecanoe	5/17/05	41.32199	-85.74247	102	12.0	1			1							1	1
Tippecanoe	5/17/05	41.32239	-85.74106	103	5.0	1			1							1	1
Tippecanoe	5/17/05	41.32291	-85.7399	104	3.0	5										0	0
Tippecanoe	5/17/05	41.32355	-85.74065	105	3.0		4	2								2	0
Tippecanoe	5/17/05	41.32331	-85.7413	106	6.0											0	0
Tippecanoe	5/17/05	41.32416	-85.74215	107	3.0											0	0
Tippecanoe	5/17/05	41.32376	-85.7433	108	5.0	1		1								1	0
Tippecanoe	5/17/05	41.32317	-85.74397	109	8.0	1			1						1	2	2
Tippecanoe	5/17/05	41.32461	-85.74438	110	3.0											0	0
Tippecanoe	5/17/05	41.32413	-85.74569	111	4.0											0	0
Tippecanoe	5/17/05	41.32338	-85.74663	112	4.0	1		1				1				2	1
Tippecanoe	5/17/05	41.32301	-85.74792	113	5.0	1		1				1				2	1
Tippecanoe	5/17/05	41.32379	-85.74939	114	3.0											0	0
Tippecanoe	5/17/05	41.32425	-85.75102	115	5.0	3		2				1				2	1
Tippecanoe	5/17/05	41.32459	-85.75184	116	16.0											0	0
Tippecanoe	5/17/05	41.32556	-85.75126	117	5.0	1						1				1	1
Tippecanoe	5/17/05	41.32654	-85.75168	118	4.0	1						1				1	1
Tippecanoe	5/17/05	41.32734	-85.75286	119	6.0	5		5								1	0
Tippecanoe	5/17/05	41.32772	-85.75434	120	4.0	1		1				1				2	1
Tippecanoe	5/17/05	41.3272	-85.75583	121	5.0	1				1				1		2	2
Tippecanoe	5/17/05	41.32694	-85.75675	122	6.0	5		5								1	0
Tippecanoe	5/17/05	41.32779	-85.75753	123	5.0	1		1				1				2	1
Tippecanoe	5/17/05	41.32888	-85.75832	124	3.0											0	0
Tippecanoe	5/17/05	41.3291	-85.75962	125	22.0											0	0
Tippecanoe	5/17/05	41.33007	-85.76032	126	5.0	1		1				1				2	1
Tippecanoe	5/17/05	41.33114	-85.76082	127	3.0	1				1						1	1
Tippecanoe	5/17/05	41.33231	-85.76139	128	7.0	1		1								1	0
Tippecanoe	5/17/05	41.33349	-85.76187	129	11.0											0	0
Tippecanoe	5/17/05	41.33461	-85.76287	130	5.0	1				1						1	1
Tippecanoe	5/17/05	41.33572	-85.76405	131	2.0	1				1						1	1
Tippecanoe	5/17/05	41.33658	-85.76549	132	6.0	1						1	1		1	3	3
Tippecanoe	5/17/05	41.33779	-85.76697	133	8.0	1			1			1	1	1		4	4
Tippecanoe	5/17/05	41.33769	-85.76846	134	6.0	1		1			1	1		1		4	3
Tippecanoe	5/17/05	41.33721	-85.76982	135	3.0											0	0
Tippecanoe	5/17/05	41.33702	-85.77136	136	4.0	1	1	1		1		1				4	2
Tippecanoe	5/17/05	41.33737	-85.77297	137	3.0	1				1						1	1
Tippecanoe	5/17/05	41.33691	-85.77434	138	4.0	1				1						1	1
Tippecanoe	5/17/05	41.33634	-85.77456	139	7.0	1			1							1	1
Tippecanoe	5/17/05	41.33636	-85.77574	140	3.0											0	0
Tippecanoe	5/17/05	41.33564	-85.7765	141	11.0	1			1							1	1
Tippecanoe	5/17/05	41.33511	-85.7776	142	4.0	1				1						1	1
Tippecanoe	5/17/05	41.33606	-85.7782	143	3.0	1				1						1	1
Tippecanoe	5/17/05	41.33552	-85.77912	144	3.0	1				1						1	1
Tippecanoe	5/17/05	41.33494	-85.77985	145	5.0	1			1		1					2	2
Tippecanoe	5/17/05	41.33435	-85.77944	146	16.0	2			2							1	1
Tippecanoe	5/17/05	41.33321	-85.77864	147	5.0	2				2						1	1
Tippecanoe	5/17/05	41.33257	-85.77885	148	3.0	1				1						1	1
Tippecanoe	5/17/05	41.3321	-85.77804	149	15.0											0	0
Tippecanoe	5/17/05	41.3313	-85.77814	150	3.0	1				1						1	1
Tippecanoe	5/17/05	41.33013	-85.77836	151	5.0											0	0
Tippecanoe	5/17/05	41.33042	-85.77933	152	3.0	1				1			1			2	2
Tippecanoe	5/17/05	41.32986	-85.77963	153	15.0											0	0
Tippecanoe	5/17/05	41.33006	-85.78045	154	6.0	1										1	1
Tippecanoe	5/17/05	41.32991	-85.78152	155	3.0	1				1						1	1
Tippecanoe	5/17/05	41.32946	-85.78158	156	5.0											0	0
Tippecanoe	5/17/05	41.32884	-85.7806	157	4.0											0	0
Tippecanoe	5/17/05	41.32835	-85.77958	158	6.0	1		1	1							2	1
Tippecanoe	5/17/05	41.32835	-85.77869	159	22.0											0	0

Species Codes	
BIBE	Bur marigold
CEDE4	Coontail
CH?AR	Chara
ELCA7	Elodea
LEMN	Duckweeds
MYHE	Broadleaf watermilfoil
MYSI	Northern watermilfoil
MYSP2	Eurasian watermilfoil
MYVE	Whorled watermilfoil
NAFL	Slender naiad
NAGU	Southern waternymph
NAMA	Spiny naiad
NAMI	Brittle waternymph
NELU	American lotus
NI?TE	Nitella
NOAQVG	No aquatic vegetation
NULU	Yellow pond lily
NYTU	White water lily
POAM	Large-leaf pondweed
POCR3	Curly-leaf pondweed
POFO3	Leafy pondweed
POGR8	Variable pondweed
POIL	Illinois pondweed
PONO2	American pondweed
POPE6	Sago pondweed
POPR5	White-stemmed pondweed
POPU7	Small pondweed
PORI2	Richardson's pondweed
POZO	Flat-stemmed pondweed
UTMA	Common bladderwort
VAAM3	Wild celery, eel grass
WO?LF	Watermeal
ZAPA	Horned pondweed
ZODU	Water stargrass
Count	34

Lake	Date	Latitude	Longitude	Site	Depth	RAKE	MYSP2	CEDE4	CH?AR	POIL	NAFL	POPE6	POPU7	VAAM3	ELCA7	NAGU	POZO	PORI2	MYSI	ZODU	SpeNum	NatSpeNum
Tippecanoe	8/8/05	41.32815	-85.7773	41	16.0	2															0	0
Tippecanoe	8/8/05	41.32834	-85.7762	42	4.0	5						1		5						5	3	3
Tippecanoe	8/8/05	41.32872	-85.7748	43	5.0	5			1					5						1	3	3
Tippecanoe	8/8/05	41.32909	-85.7732	44	4.0																0	0
Tippecanoe	8/8/05	41.33021	-85.773	45	4.0																0	0
Tippecanoe	8/8/05	41.33108	-85.7709	46	17.0	5		5													1	1
Tippecanoe	8/8/05	41.33143	-85.7699	47	4.0	2								1		1			1		3	3
Tippecanoe	8/8/05	41.33159	-85.7685	48	3.0	5								4		1				1	3	3
Tippecanoe	8/8/05	41.33067	-85.7677	49	11.0	5		1						3					1	2	4	4
Tippecanoe	8/8/05	41.3302	-85.7669	50	9.0	5		1						5					1		3	3
Tippecanoe	8/8/05	41.32972	-85.7662	51	16.0																0	0
Tippecanoe	8/8/05	41.32912	-85.7653	52	6.0	5								5	1		1		1		4	4
Tippecanoe	8/8/05	41.32879	-85.7643	53	5.0	5				2				4					2		3	3
Tippecanoe	8/8/05	41.32836	-85.763	54	11.0	3								3							1	1
Tippecanoe	8/8/05	41.32776	-85.7627	55	7.0	4		1						4							2	2
Tippecanoe	8/8/05	41.32702	-85.7626	56	3.0	1														1	1	1
Tippecanoe	8/8/05	41.32624	-85.7623	57	4.0	5			5					1				1			3	3
Tippecanoe	8/8/05	41.32603	-85.7618	58	6.0	5	1							5					1		3	2
Tippecanoe	8/8/05	41.32555	-85.7615	59	4.0	3			1					1						1	3	3
Tippecanoe	8/8/05	41.32518	-85.761	60	4.0	3			1					3						1	3	3
Tippecanoe	8/8/05	41.32512	-85.7605	61	17.0																0	0
Tippecanoe	8/8/05	41.32453	-85.76	62	4.0	5			1					5							2	2
Tippecanoe	8/8/05	41.3243	-85.7589	63	4.0	1					1			1						1	3	3
Tippecanoe	8/8/05	41.32444	-85.7575	64	5.0	5				1				5							2	2
Tippecanoe	8/8/05	41.32462	-85.757	65	14.0	1		1													1	1
Tippecanoe	8/8/05	41.32403	-85.7568	66	2.0																0	0
Tippecanoe	8/8/05	41.32337	-85.757	67	4.0	4						1		4							2	2
Tippecanoe	8/8/05	41.32281	-85.7569	68	7.0	5						3									1	1
Tippecanoe	8/8/05	41.32234	-85.7573	69	4.0	5								4							1	1
Tippecanoe	8/8/05	41.32198	-85.7571	70	9.0	2		1						1		1	1				4	4
Tippecanoe	8/8/05	41.32149	-85.7572	71	3.0	4								4			1				2	2
Tippecanoe	8/8/05	41.32114	-85.7566	72	5.0	5								5			1			1	3	3
Tippecanoe	8/8/05	41.32091	-85.7559	73	9.0	5		5						5			1				3	3
Tippecanoe	8/8/05	41.32081	-85.7551	74	5.0	2								2							1	1
Tippecanoe	8/8/05	41.32024	-85.7554	75	9.0	5		3				2									2	2
Tippecanoe	8/8/05	41.31986	-85.7564	76	5.0	5		3				5							1		3	3
Tippecanoe	8/8/05	41.31984	-85.7571	77	4.0	4								1				4			2	2
Tippecanoe	8/8/05	41.31922	-85.757	78	4.0	4								1				4			2	2
Tippecanoe	8/8/05	41.31901	-85.7558	79	7.0	5		1				5		2							3	3
Tippecanoe	8/8/05	41.31866	-85.7547	80	3.0	1		1													1	1
Tippecanoe	8/8/05	41.31882	-85.7535	81	19.0	1		1													1	1
Tippecanoe	8/8/05	41.318	-85.7534	82	6.0	4		2						2				1			3	3
Tippecanoe	8/8/05	41.31704	-85.7533	83	4.0	5								5							1	1
Tippecanoe	8/8/05	41.31673	-85.7522	84	4.0	5			1	1				5							3	3
Tippecanoe	8/8/05	41.31752	-85.7516	85	7.0	4		2						2			1				3	3
Tippecanoe	8/8/05	41.31758	-85.7503	86	4.0	5			1					3				1		1	4	4
Tippecanoe	8/8/05	41.31784	-85.7491	87	3.0	3					1			1				1			3	3
Tippecanoe	8/8/05	41.31856	-85.7486	88	4.0																0	0
Tippecanoe	8/8/05	41.31922	-85.7478	89	4.0																0	0
Tippecanoe	8/8/05	41.31982	-85.7473	90	8.0	1	1	1						1							3	2
Tippecanoe	8/8/05	41.31914	-85.747	91	4.0																0	0
Tippecanoe	8/8/05	41.31861	-85.7464	92	3.0																0	0
Tippecanoe	8/8/05	41.31849	-85.7451	93	3.0																0	0
Tippecanoe	8/8/05	41.31928	-85.7448	94	5.0																0	0
Tippecanoe	8/8/05	41.31998	-85.7442	95	7.0	5		5													1	1
Tippecanoe	8/8/05	41.3199	-85.7431	96	4.5																0	0
Tippecanoe	8/8/05	41.31946	-85.742	97	3.0	2		2													1	1
Tippecanoe	8/8/05	41.32006	-85.7408	98	4.0	5		5	5												2	2
Tippecanoe	8/8/05	41.3209	-85.7414	99	4.0	1								1							1	1
Tippecanoe	8/8/05	41.32103	-85.7427	100	5.0																0	0
Tippecanoe	8/8/05	41.32139	-85.7439	101	22.0	2			2												1	1
Tippecanoe	8/8/05	41.32199	-85.7425	102	20.0	5		5													1	1
Tippecanoe	8/8/05	41.32239	-85.7411	103	5.0																0	0
Tippecanoe	8/8/05	41.32291	-85.7399	104	4.0																0	0
Tippecanoe	8/8/05	41.32355	-85.7407	105	7.0	5		5													1	1
Tippecanoe	8/8/05	41.32331	-85.7413	106	6.0																0	0
Tippecanoe	8/8/05	41.32416	-85.7421	107	3.0	1								1			1				2	2
Tippecanoe	8/8/05	41.32376	-85.7433	108	5.0	2								2							1	1
Tippecanoe	8/8/05	41.32317	-85.744	109	11.0	5	2					5									2	1
Tippecanoe	8/8/05	41.32461	-85.7444	110	4.0	1								1							1	1
Tippecanoe	8/8/05	41.32413	-85.7457	111	5.0	5								5							1	1
Tippecanoe	8/8/05	41.32338	-85.7466	112	4.0	5								5						1	2	2
Tippecanoe	8/8/05	41.32301	-85.7479	113	4.0	5								4					1	2	3	3
Tippecanoe	8/8/05	41.32379	-85.7494	114	3.0	3								2						2	2	2
Tippecanoe	8/8/05	41.32425	-85.751	115	5.0	4		5												4	2	2
Tippecanoe	8/8/05	41.32459	-85.7518	116	14.0	5															0	0

Species Codes	
BIBE	Bur marigold
CEDE4	Coontail
CH?AR	Chara
ELCA7	Elodea
LEMN	Duckweeds
MYHE	Broadleaf watermilfoil
MYSI	Northern watermilfoil
MYSP2	Eurasian watermilfoil
MYVE	Whorled watermilfoil
NAFL	Slender naiad
NAGU	Southern waternymph
NAMA	Spiny naiad
NAMI	Brittle waternymph
NELU	American lotus
NI?TE	Nitella
NOAQVG	No aquatic vegetation
NULU	Yellow pond lily
NYTU	White water lily
POAM	Large-leaf pondweed
POCR3	Curly-leaf pondweed
POFO3	Leafy pondweed
POGR8	Variable pondweed
POIL	Illinois pondweed
PONO2	American pondweed
POPE6	Sago pondweed
POPR5	White-stemmed pondweed
POPU7	Small pondweed
PORI2	Richardson's pondweed
POZO	Flat-stemmed pondweed
UTMA	Common bladderwort
VAAM3	Wild celery, eel grass
WO?LF	Watermeal
ZAPA	Horned pondweed
ZODU	Water stargrass
Count	34

AQUATIC CONTROL

Lake	Date	Latitude	Longitude	Site	Depth	RAKE	MYSP2	CEDE4	CH?AR	POIL	NAFL	POPE6	POPU7	VAAM3	ELCA7	NAGU	POZO	PORI2	MYSI	ZODU	SpeNum	NatSpeNum	Species Codes	
Tippecanoe	8/8/05	41.32556	-85.7513	117	5.0	5								1						5	2	2	BIBE	Bur marigold
Tippecanoe	8/8/05	41.32654	-85.7517	118	4.0	4								4			1				2	2	CEDE4	Coontail
Tippecanoe	8/8/05	41.32734	-85.7529	119	6.0	5								5							1	1	CH?AR	Chara
Tippecanoe	8/8/05	41.32772	-85.7543	120	4.0	5								5			2		1		3	3	ELCA7	Elodea
Tippecanoe	8/8/05	41.3272	-85.7558	121	6.0	5								5		1					2	2	LEMN	Duckweeds
Tippecanoe	8/8/05	41.32694	-85.7567	122	8.0	4	1							1				1		2	4	3	MYHE	Broadleaf watermilfoil
Tippecanoe	8/8/05	41.32779	-85.7575	123	4.0	5								5						3	2	2	MYSI	Northern watermilfoil
Tippecanoe	8/8/05	41.32888	-85.7583	124	3.0	5								5				1		1	3	3	MYSP2	Eurasian watermilfoil
Tippecanoe	8/8/05	41.3291	-85.7596	125	24.0																0	0	MYVE	Whorled watermilfoil
Tippecanoe	8/8/05	41.33007	-85.7603	126	5.0	5								5							1	1	NAFL	Slender naiad
Tippecanoe	8/8/05	41.33114	-85.7608	127	5.0	5								5			1		1		3	3	NAGU	Southern waternymph
Tippecanoe	8/8/05	41.33231	-85.7614	128	5.0	5							1	5			1				3	3	NAMA	Spiny naiad
Tippecanoe	8/8/05	41.33349	-85.7619	129	12.0	3		3													1	1	NAMI	Brittle waternymph
Tippecanoe	8/8/05	41.33461	-85.7629	130	6.0	5			5					4			1				3	3	NELU	American lotus
Tippecanoe	8/8/05	41.33572	-85.7641	131	4.0	1			1												1	1	NI?TE	Nitella
Tippecanoe	8/8/05	41.33658	-85.7655	132	4.0	5								5					1	2	3	3	NOAQVG	No aquatic vegetation
Tippecanoe	8/8/05	41.33779	-85.767	133	14.0	5		5						2							2	2	NULU	Yellow pond lily
Tippecanoe	8/8/05	41.33769	-85.7685	134	7.0	5		1				5		3							3	3	NYTU	White water lily
Tippecanoe	8/8/05	41.33721	-85.7698	135	7.0	5		2						3							2	2	POAM	Large-leaf pondweed
Tippecanoe	8/8/05	41.33702	-85.7714	136	4.0																0	0	POCR3	Curly-leaf pondweed
Tippecanoe	8/8/05	41.33737	-85.773	137	4.0	3								3							1	1	POFO3	Leafy pondweed
Tippecanoe	8/8/05	41.33691	-85.7743	138	4.0	1			1					1							2	2	POGR8	Variable pondweed
Tippecanoe	8/8/05	41.33634	-85.7746	139	9.0	5		5													1	1	POIL	Illinois pondweed
Tippecanoe	8/8/05	41.33636	-85.7757	140	4.0	1			1			1									2	2	PONO2	American pondweed
Tippecanoe	8/8/05	41.33564	-85.7765	141	16.0	5		5													1	1	POPE6	Sago pondweed
Tippecanoe	8/8/05	41.33511	-85.7776	142	4.0																0	0	POPR5	White-stemmed pondweed
Tippecanoe	8/8/05	41.33606	-85.7782	143	3.0	5			5					3				1			3	3	POPU7	Small pondweed
Tippecanoe	8/8/05	41.33552	-85.7791	144	4.0	5			5			3		1							3	3	PORI2	Richardson's pondweed
Tippecanoe	8/8/05	41.33494	-85.7798	145	5.0	5		1				2		4							3	3	POZO	Flat-stemmed pondweed
Tippecanoe	8/8/05	41.33435	-85.7794	146	15.0	1		1													1	1	UTMA	Common bladderwort
Tippecanoe	8/8/05	41.33321	-85.7786	147	4.0	1			1												1	1	VAAM3	Wild celery, eel grass
Tippecanoe	8/8/05	41.33257	-85.7788	148	3.0	1			1					1							2	2	WO?LF	Watermeal
Tippecanoe	8/8/05	41.3321	-85.778	149	9.0	1			1												1	1	ZAPA	Horned pondweed
Tippecanoe	8/8/05	41.3313	-85.7781	150	4.0	5			5												1	1	ZODU	Water stargrass
Tippecanoe	8/8/05	41.33013	-85.7784	151	4.0																0	0		
Tippecanoe	8/8/05	41.33042	-85.7793	152	3.0	5			4					1			1				3	3	Count	34
Tippecanoe	8/8/05	41.32986	-85.7796	153	11.0	5		5				2							1		3	3		
Tippecanoe	8/8/05	41.33006	-85.7805	154	7.0	5								5					1		2	2		
Tippecanoe	8/8/05	41.32991	-85.7815	155																	0	0		
Tippecanoe	8/8/05	41.32946	-85.7816	156																	0	0		
Tippecanoe	8/8/05	41.32884	-85.7806	157	4.0	5			1					1			3				3	3		
Tippecanoe	8/8/05	41.32835	-85.7796	158	4.0	3		1	1					2							4	3		
Tippecanoe	8/8/05	41.32835	-85.7787	159	15.0	3		1						1					2		3	3		

AQUATIC CONTROL

Oswego Lake

Lake	Date	Latitude	Longitude	Site	Depth	RAKE	MYSP2	POCR3	CEDE4	CH?AR	POZO	PORI2	MYVE	SpeNum	NatSpeNum	Species Codes	
Oswego	5/17/05	41.32948	-85.7845	1	6.0	1			1		1			2	2	BIBE	Bur marigold
Oswego	5/17/05	41.32934	-85.7856	2	6.0	1	1	1		1				3	1	CEDE4	Coontail
Oswego	5/17/05	41.3291	-85.7839	3	5.0	1		1	1		1			3	2	CH?AR	Chara
Oswego	5/17/05	41.32845	-85.784	4	4.0	1				1	1			2	2	ELCA7	Elodea
Oswego	5/17/05	41.32786	-85.7846	5	4.0	1			1	1	1			3	3	LEMN	Duckweeds
Oswego	5/17/05	41.32716	-85.7851	6	6.0	1			1					1	1	MYHE	Broadleaf watermilfoil
Oswego	5/17/05	41.32646	-85.7853	7	6.0	1	1				1			2	1	MYSI	Northern watermilfoil
Oswego	5/17/05	41.32617	-85.7864	8	19.0									0	0	MYSP2	Eurasian watermilfoil
Oswego	5/17/05	41.32686	-85.7867	9	5.0									0	0	MYVE	Whorled watermilfoil
Oswego	5/17/05	41.32748	-85.7876	10	6.0	1		1	1					2	1	NAFL	Slender naiad
Oswego	5/17/05	41.32822	-85.787	11	7.0	5	2	5	1					3	1	NAGU	Southern waternymph
Oswego	5/17/05	41.32755	-85.7884	12	5.0	5		5	2					2	1	NAMA	Spiny naiad
Oswego	5/17/05	41.32682	-85.7887	13	5.0	5		5						1	0	NAMI	Brittle waternymph
Oswego	5/17/05	41.32658	-85.7882	14	6.0									0	0	NELU	American lotus
Oswego	5/17/05	41.32646	-85.7872	15	8.0	1	1							1	0	NI?TE	Nitella
Oswego	5/17/05	41.32631	-85.7847	16	7.0	1						1		1	1	NOAQVG	No aquatic vegetation
Oswego	5/17/05	41.32635	-85.7839	17	5.0	1		1			1		1	3	2	NULU	Yellow pond lily
Oswego	5/17/05	41.32601	-85.7835	18	3.0	1				1				1	1	NYTU	White water lily
Oswego	5/17/05	41.32608	-85.787	19	15.0									0	0	POAM	Large-leaf pondweed
Oswego	5/17/05	41.32625	-85.7885	20	5.0	1						1		1	1	POCR3	Curly-leaf pondweed
Oswego	5/17/05	41.32588	-85.789	21	3.0	1			1					1	1	POFO3	Leafy pondweed
Oswego	5/17/05	41.32559	-85.7884	22	19.0									0	0	POGR8	Variable pondweed
Oswego	5/17/05	41.32505	-85.7888	23	14.0									0	0	POIL	Illinois pondweed
Oswego	5/17/05	41.32441	-85.789	24	5.0	1		1	1				1	3	2	PONO2	American pondweed
Oswego	5/17/05	41.32396	-85.7888	25	3.0	1				1				1	1	POPE6	Sago pondweed
Oswego	5/17/05	41.32324	-85.7889	26	3.0	1				1	1			2	2	POPR5	White-stemmed pondweed
Oswego	5/17/05	41.32415	-85.7882	27	8.0	1		1					1	2	1	POPU7	Small pondweed
Oswego	5/17/05	41.32389	-85.7875	28	4.0	2				2				1	1	PORI2	Richardson's pondweed
Oswego	5/17/05	41.32398	-85.7869	29	12.0	1							1	1	1	POZO	Flat-stemmed pondweed
Oswego	5/17/05	41.3237	-85.7865	30	3.0	1				1				1	1	UTMA	Common bladderwort
Oswego	5/17/05	41.3239	-85.7856	31	12.0	1			1					1	1	VAAM3	Wild celery, eel grass
Oswego	5/17/05	41.32386	-85.7851	32	5.0	1				1				1	1	WO?LF	Watermeal
Oswego	5/17/05	41.32434	-85.7846	33	5.0									0	0	ZAPA	Horned pondweed
Oswego	5/17/05	41.32495	-85.7843	34	15.0									0	0	ZODU	Water stargrass
Oswego	5/17/05	41.32543	-85.7837	35	5.0	1					1			1	1		
Oswego	5/17/05	41.32688	-85.7836	36	3.0	1				1			1	2	2	Count	34
Oswego	5/17/05	41.32765	-85.7837	37	2.0	1				1				1	1		
Oswego	5/17/05	41.3283	-85.7832	38	2.0	1					1			1	1		
Oswego	5/17/05	41.32882	-85.7832	39	3.0									0	0		
Oswego	5/17/05	41.3289	-85.7828	40	4.0									0	0		

Lake	Date	Latitude	Longitude	Site	Depth	RAKE	MYSP2	POCR3	CEDE4	CH?AR	NAFL	POPE6	POPU7	VAAM3	NAGU	POZO	PORI2	POAM	MYSI	MYVE	NAMA	UTMA	SpeNum	NatSpeNum
Oswego	8/8/05	41.32948	-85.78449	1	6.0	5								1			1			5			3	3
Oswego	8/8/05	41.32934	-85.78559	2	6.0	5			1	5			1	1								1	5	5
Oswego	8/8/05	41.3291	-85.78388	3	5.0	4			4	1			1										3	3
Oswego	8/8/05	41.32845	-85.78398	4	4.0	3				1				2					1				3	3
Oswego	8/8/05	41.32786	-85.78462	5	4.0	5	1			1		2		4									4	3
Oswego	8/8/05	41.32716	-85.78509	6	7.0	3			2							1			1				3	3
Oswego	8/8/05	41.32646	-85.78533	7	7.0																		0	0
Oswego	8/8/05	41.32617	-85.78637	8	22.0																		0	0
Oswego	8/8/05	41.32686	-85.78674	9	5.0	1				1				1									2	2
Oswego	8/8/05	41.32748	-85.78757	10	6.0	5			5														1	1
Oswego	8/8/05	41.32822	-85.78702	11	7.0	5			5		1												2	2
Oswego	8/8/05	41.32755	-85.78845	12	5.0	5			1		5												2	2
Oswego	8/8/05	41.32682	-85.78871	13	6.0	1			1					1									2	2
Oswego	8/8/05	41.32658	-85.78817	14	6.0	1				1				1									2	2
Oswego	8/8/05	41.32646	-85.78725	15	8.0	5			5					4									2	2
Oswego	8/8/05	41.32631	-85.78469	16	10.0	3								1		2	1			1			4	4
Oswego	8/8/05	41.32635	-85.78387	17	5.0	1								1									1	1
Oswego	8/8/05	41.32601	-85.78349	18	3.0	5			1	3				1		1		1			1		6	6
Oswego	8/8/05	41.32608	-85.78703	19	22.0																		0	0
Oswego	8/8/05	41.32625	-85.78849	20	5.0	1								1									1	1
Oswego	8/8/05	41.32588	-85.78901	21	3.0	5				4				2									2	2
Oswego	8/8/05	41.32559	-85.78836	22	21.0																		0	0
Oswego	8/8/05	41.32505	-85.78884	23	12.0	1			1														1	1
Oswego	8/8/05	41.32441	-85.78896	24	4.0	4				4			1										2	2
Oswego	8/8/05	41.32396	-85.78884	25	4.0	5				4				1	1								3	3
Oswego	8/8/05	41.32324	-85.78886	26	3.0	5				3				5									2	2
Oswego	8/8/05	41.32415	-85.78817	27	8.0	1			1					1									2	2
Oswego	8/8/05	41.32389	-85.78753	28	3.0	1				1													1	1
Oswego	8/8/05	41.32398	-85.78686	29	9.0	2								2									1	1
Oswego	8/8/05	41.3237	-85.78648	30	3.0	1				1													1	1
Oswego	8/8/05	41.3239	-85.78564	31	9.0	2			1	1				1							1		4	4
Oswego	8/8/05	41.32386	-85.78513	32	4.0	4	1			1				1							1		4	3
Oswego	8/8/05	41.32434	-85.78456	33	5.0	3				1											1		2	2
Oswego	8/8/05	41.32495	-85.7843	34	19.0	1			1														1	1
Oswego	8/8/05	41.32543	-85.7837	35	6.0	5			1												1		2	2
Oswego	8/8/05	41.32688	-85.78364	36	3.0	5				5		1		1									3	3
Oswego	8/8/05	41.32765	-85.78366	37	2.0	5				1		4											2	2
Oswego	8/8/05	41.3283	-85.78322	38	3.0	2		1		1		3		1									4	3
Oswego	8/8/05	41.32882	-85.78322	39	4.0	1						1											1	1
Oswego	8/8/05	41.3289	-85.78282	40	4.0									1			1						2	2

Species Codes	
BIBE	Bur marigold
CEDE4	Coontail
CH?AR	Chara
ELCA7	Elodea
LEMN	Duckweeds
MYHE	Broadleaf watermilfoil
MYSI	Northern watermilfoil
MYSP2	Eurasian watermilfoil
MYVE	Whorled watermilfoil
NAFL	Slender naiad
NAGU	Southern waternymph
NAMA	Spiny naiad
NAMI	Brittle waternymph
NELU	American lotus
NI?TE	Nitella
NOAQVG	No aquatic vegetation
NULU	Yellow pond lily
NYTU	White water lily
POAM	Large-leaf pondweed
POCR3	Curly-leaf pondweed
POFO3	Leafy pondweed
POGR8	Variable pondweed
POIL	Illinois pondweed
PONO2	American pondweed
POPE6	Sago pondweed
POPR5	White-stemmed pondweed
POPU7	Small pondweed
PORI2	Richardson's pondweed
POZO	Flat-stemmed pondweed
UTMA	Common bladderwort
VAAM3	Wild celery, eel grass
WO?LF	Watermeal
ZAPA	Horned pondweed
ZODU	Water stargrass
Count	34

James Lake

Lake	Date	Latitude	Longitude	Site	Depth	RAKE	MYSP2	POCR3	CEDE4	CH?AR	VAAM3	ELCA7	POZO	MYVE	ZODU	SpeNum	NatSpeNum	Species Codes	
James	5/17/05	41.32285	-85.7336	160	22.0											0	0	BIBE	Bur marigold
James	5/17/05	41.3227	-85.7324	161	3.0											0	0	CEDE4	Coontail
James	5/17/05	41.32261	-85.73136	162	7.0	1	1	1	1							3	1	CH?AR	Chara
James	5/17/05	41.32192	-85.73105	163	3.0	2	1	1		2						3	1	ELCA7	Elodea
James	5/17/05	41.32131	-85.73036	164	7.0	4	1	2	2							3	1	LEMN	Duckweeds
James	5/17/05	41.32044	-85.73028	165	3.0	3			3	1			1			3	3	MYHE	Broadleaf watermilfoil
James	5/17/05	41.31961	-85.73011	166	9.0	4		1	4							2	1	MYSI	Northern watermilfoil
James	5/17/05	41.31859	-85.7305	167	5.0	2	1	1		1			1			4	2	MYSP2	Eurasian watermilfoil
James	5/17/05	41.31784	-85.72967	168	6.0	4			4							1	1	MYVE	Whorled watermilfoil
James	5/17/05	41.31706	-85.72925	169	4.0	2				2				1		2	2	NAFL	Slender naiad
James	5/17/05	41.31631	-85.72933	170	5.0	2			2	1						2	2	NAGU	Southern waternymph
James	5/17/05	41.3158	-85.72965	171	3.0	4			4							1	1	NAMA	Spiny naiad
James	5/17/05	41.31496	-85.72995	172	7.0	1	1		1					1		3	2	NAMI	Brittle waternymph
James	5/17/05	41.31431	-85.72967	173	5.0	1	1		1							2	1	NELU	American lotus
James	5/17/05	41.31402	-85.73084	174	6.0	1			1				1			2	2	NI?TE	Nitella
James	5/17/05	41.31354	-85.73069	175	18.0											0	0	NOAQVG	No aquatic vegetation
James	5/17/05	41.31291	-85.73015	176	3.0	1				1						1	1	NULU	Yellow pond lily
James	5/17/05	41.31247	-85.7293	177	15.0								1			1	1	NYTU	White water lily
James	5/17/05	41.31212	-85.72867	178	13.0											0	0	POAM	Large-leaf pondweed
James	5/17/05	41.31193	-85.72777	179	3.0	3		3								1	0	POCR3	Curly-leaf pondweed
James	5/17/05	41.31208	-85.72702	180	5.0	4		1	4				1			3	2	POFO3	Leafy pondweed
James	5/17/05	41.31234	-85.7262	181	6.0	1			1							1	1	POGR8	Variable pondweed
James	5/17/05	41.31224	-85.72561	182	4.0	5	2	2					1			3	1	POIL	Illinois pondweed
James	5/17/05	41.31238	-85.72476	183	3.0	2	1			1						2	1	PONO2	American pondweed
James	5/17/05	41.31275	-85.72403	184	3.0	2				2			1			2	2	POPE6	Sago pondweed
James	5/17/05	41.31351	-85.72422	185	4.0	5	1		1	5						3	2	POPR5	White-stemmed pondweed
James	5/17/05	41.31411	-85.72474	186	12.0											0	0	POPU7	Small pondweed
James	5/17/05	41.31415	-85.72394	187	6.0	2							1			1	1	PORI2	Richardson's pondweed
James	5/17/05	41.31394	-85.72293	188	3.0	1	1	1	1							3	1	POZO	Flat-stemmed pondweed
James	5/17/05	41.31419	-85.72239	189	4.0	1		1	1				1			3	2	UTMA	Common bladderwort
James	5/17/05	41.3149	-85.7224	190	15.0											0	0	VAAM3	Wild celery, eel grass
James	5/17/05	41.31551	-85.72169	191	5.0	1		1	1							2	1	WO?LF	Watermeal
James	5/17/05	41.31617	-85.72144	192	5.0	5	1	1	2						5	4	2	ZAPA	Horned pondweed
James	5/17/05	41.31657	-85.72254	193	7.0	1			1							1	1	ZODU	Water stargrass
James	5/17/05	41.31702	-85.72313	194	16.0											0	0		
James	5/17/05	41.31784	-85.72337	195	3.0	1		1		1						2	1	Count	34
James	5/17/05	41.31654	-85.72349	196	5.0	3		1		3						2	1		
James	5/17/05	41.31909	-85.72292	197	3.0	1	1			1		1				3	2		
James	5/17/05	41.31961	-85.72309	198	3.0	5	1			5	1					3	2		
James	5/17/05	41.32015	-85.72298	199	3.0	2	1			2						2	1		
James	5/17/05	41.32076	-85.7229	200	4.0	3	1	1		2		1				4	2		
James	5/17/05	41.32143	-85.72309	201	3.0	1				1						1	1		
James	5/17/05	41.32198	-85.72388	202	5.0	1		1		1						2	1		
James	5/17/05	41.3226	-85.72432	203	4.0	1				1						1	1		
James	5/17/05	41.3233	-85.72499	204	3.0	1		1		1						2	1		
James	5/17/05	41.32338	-85.72609	205	7.0	5	2	1	2							3	1		
James	5/17/05	41.32373	-85.72705	206	5.0	5	5	2		1						3	1		
James	5/17/05	41.32365	-85.72838	207	5.0	5	3			2						2	1		
James	5/17/05	41.32391	-85.72921	208	3.0	1	1						1			2	1		
James	5/17/05	41.32391	-85.7299	209	15.0	4			4							1	1		
James	5/17/05	41.32452	-85.73067	210	3.0	5		1				4		1		3	2		
James	5/17/05	41.32484	-85.7313	211	3.0	2	1	2	1			1	1			5	3		
James	5/17/05	41.32507	-85.73197	212	12.0											0	0		
James	5/17/05	41.32576	-85.7327	213	3.0	2			2			1				2	2		
James	5/17/05	41.32581	-85.73335	214	2.0	5		1				5				2	1		
James	5/17/05	41.32551	-85.73368	215	5.0	5		2				5				2	1		
James	5/17/05	41.32547	-85.73444	216	3.0	2			1			1				2	2		
James	5/17/05	41.32519	-85.73523	217	6.0	3		3	1			1				3	2		
James	5/17/05	41.3249	-85.7355	218	5.0	5		5	1			1				3	2		
James	5/17/05	41.32437	-85.73588	219	6.0	4		2	2							2	1		
James	5/17/05	41.32388	-85.73591	220	12.0											0	0		
James	5/17/05	41.32325	-85.73583	221	7.0	5		5	2							2	1		
James	5/17/05	41.32314	-85.73524	222	22.0											0	0		
James	5/17/05	41.32267	-85.73452	223	5.0	4	1	1	3				1			4	2		

Lake	Date	Latitude	Longitude	Site	Depth	RAKE	MYSP2	CEDE4	CH?AR	NAFL	POPU7	VAAM3	ELCA7	NAGU	SPPO	POZO	PORI2	MYSI	MYVE	ZODU	SpeNum	NatSpeNum
James	8/9/05	41.32285	-85.7336	160	12.0	5		5				1				1					3	3
James	8/9/05	41.3227	-85.7324	161	3.0	1				1											1	1
James	8/9/05	41.32261	-85.7314	162	4.0	1		1						1							2	2
James	8/9/05	41.32192	-85.731	163	3.0	2		1	1												2	2
James	8/9/05	41.32131	-85.7304	164	4.0	1			1												1	1
James	8/9/05	41.32044	-85.7303	165	2.0	5					5	2									2	2
James	8/9/05	41.31961	-85.7301	166	21.0																0	0
James	8/9/05	41.31859	-85.7305	167	4.0	1		1				1									2	2
James	8/9/05	41.31784	-85.7297	168	2.0	1		1	1												2	2
James	8/9/05	41.31706	-85.7292	169	3.0	1				1											1	1
James	8/9/05	41.31631	-85.7293	170	3.0																0	0
James	8/9/05	41.3158	-85.7297	171	4.0	2		1	1				1								3	3
James	8/9/05	41.31496	-85.73	172	4.0	4		4													1	1
James	8/9/05	41.31431	-85.7297	173	14.0	3		3													1	1
James	8/9/05	41.31402	-85.7308	174	5.0	5		5	1												2	2
James	8/9/05	41.31354	-85.7307	175	20.0	1		1													1	1
James	8/9/05	41.31291	-85.7302	176	3.0	5		1	5												2	2
James	8/9/05	41.31247	-85.7293	177	4.0	1				1											1	1
James	8/9/05	41.31212	-85.7287	178	12.0	5		5													1	1
James	8/9/05	41.31193	-85.7278	179	3.0	5			5			1									2	2
James	8/9/05	41.31208	-85.727	180	3.0	4			4			1									2	2
James	8/9/05	41.31234	-85.7262	181	5.0	5		5												1	2	2
James	8/9/05	41.31224	-85.7256	182	4.0	1				1		1									2	2
James	8/9/05	41.31238	-85.7248	183	3.0	2			1			2									2	2
James	8/9/05	41.31275	-85.724	184	3.0	5		1	5			1									3	3
James	8/9/05	41.31351	-85.7242	185	4.0	1		1													1	1
James	8/9/05	41.31411	-85.7247	186	21.0																0	0
James	8/9/05	41.31415	-85.7239	187	5.0																0	0
James	8/9/05	41.31394	-85.7229	188	3.0	4			2			2									2	2
James	8/9/05	41.31419	-85.7224	189	4.0	5			5			1				1					3	3
James	8/9/05	41.3149	-85.7224	190	23.0	2		2													1	1
James	8/9/05	41.31551	-85.7217	191	5.0																0	0
James	8/9/05	41.31617	-85.7214	192	4.0	2		1				1			1						3	3
James	8/9/05	41.31657	-85.7225	193	5.0	4		4										1			2	2
James	8/9/05	41.31702	-85.7231	194	18.0	5		5													1	1
James	8/9/05	41.31784	-85.7234	195	4.0	5			1	5											2	2
James	8/9/05	41.31854	-85.7235	196	3.0	2				1		2									2	2
James	8/9/05	41.31909	-85.7229	197	4.0	3	1		1			1	1								4	3
James	8/9/05	41.31961	-85.7231	198	4.0	1			1	1			1								3	3
James	8/9/05	41.32015	-85.723	199	4.0	5		5				1	1					1			4	4
James	8/9/05	41.32076	-85.7229	200	4.0	5		5				5					1				3	3
James	8/9/05	41.32143	-85.7231	201	4.0	1								1							1	1
James	8/9/05	41.32198	-85.7239	202	4.0	1						1				1					2	2
James	8/9/05	41.3226	-85.7243	203	4.0	5			4			4									2	2
James	8/9/05	41.3233	-85.725	204	4.0	5			5												1	1
James	8/9/05	41.32338	-85.7261	205	5.0	5		5				4									2	2
James	8/9/05	41.32373	-85.7271	206	4.0	1		1				1									2	2
James	8/9/05	41.32365	-85.7284	207	4.0	2		2				1									2	2
James	8/9/05	41.32391	-85.7292	208	3.0	1				1		1									2	2
James	8/9/05	41.32391	-85.7299	209	21.0																0	0
James	8/9/05	41.32452	-85.7307	210	8.0	5		5													1	1
James	8/9/05	41.32484	-85.7313	211	3.0	3			3			1							1		3	3
James	8/9/05	41.32507	-85.732	212	12.0	5		5													1	1
James	8/9/05	41.32576	-85.7327	213	15.0	5		5													1	1
James	8/9/05	41.32581	-85.7333	214	3.0	5		5													1	1
James	8/9/05	41.32551	-85.7337	215	7.0	5		5													1	1
James	8/9/05	41.32547	-85.7344	216	16.0	2		2													1	1
James	8/9/05	41.32519	-85.7352	217	12.0	5		5													1	1
James	8/9/05	41.3249	-85.7355	218	16.0	4		4													1	1
James	8/9/05	41.32437	-85.7359	219	9.0	5		5													1	1
James	8/9/05	41.32388	-85.7359	220	20.0																0	0
James	8/9/05	41.32325	-85.7358	221	7.0	5		5				2									2	2
James	8/9/05	41.32314	-85.7352	222	25.0																0	0
James	8/9/05	41.32267	-85.7345	223	4.0	4		2				2								1	3	3

Species Codes	
BIBE	Bur marigold
CEDE4	Coontail
CH?AR	Chara
ELCA7	Elodea
LEMN	Duckweeds
MYHE	Broadleaf watermilfoil
MYSI	Northern watermilfoil
MYSP2	Eurasian watermilfoil
MYVE	Whorled watermilfoil
NAFL	Slender naiad
NAGU	Southern waternymph
NAMA	Spiny naiad
NAMI	Brittle waternymph
NELU	American lotus
NI?TE	Nitella
NOAQVG	No aquatic vegetation
NULU	Yellow pond lily
NYTU	White water lily
POAM	Large-leaf pondweed
POCR3	Curly-leaf pondweed
POFO3	Leafy pondweed
POGR8	Variable pondweed
POIL	Illinois pondweed
PONO2	American pondweed
POPE6	Sago pondweed
POPR5	White-stemmed pondweed
POPU7	Small pondweed
PORI2	Richardson's pondweed
POZO	Flat-stemmed pondweed
UTMA	Common bladderwort
VAAM3	Wild celery, eel grass
WO?LF	Watermeal
ZAPA	Horned pondweed
ZODU	Water stargrass
Count	34

APPENDIX UPDATE-Vegetation Control Permits

Lake Tippecanoe

APPLICATION FOR AQUATIC VEGETATION CONTROL PERMIT
State Form 26727 (R / 11-03)
Approved State Board of Accounts 1987
[ ] Whole Lake [X] Multiple Treatment Areas
Check type of permit

INSTRUCTIONS: Please print or type information

FOR OFFICE USE ONLY
License No.
Date Issued
Lake County

Return to: Page 1 of 6
DEPARTMENT OF NATURAL RESOURCES
Division of Fish and Wildlife
Commercial License Clerk
402 West Washington Street, Room W273
Indianapolis, IN 46204

FEE: $5.00

Applicant's Name	Lake Assoc. Name	
Lake Tippecanoe POA	Lake Tippecanoe POA	
Rural Route or Street		Phone Number
67 EMS T 49A Lane		574-834-2185
City and State		ZIP Code
Syracuse, IN		46567
Certified Applicator (if applicable)	Company or Inc. Name	Certification Number
Rural Route or Street		Phone Number
City and State		ZIP Code

Lake (One application per lake)	Nearest Town	County
Lake Tippecanoe	North Webster	Kosciusko
Does water flow into a water supply		[ ] Yes [X] No

Please complete one section for *EACH* treatment area. Attach lake map showing treatment area and denote location of any water supply intake.

Treatment Area #	1	LAT/LONG or UTM's	Treatment of EWM and CLP where they occur (no more than 40 acres, see avmp)
Total acres to be controlled	<40	Proposed shoreline treatment length (ft)	Perpendicular distance from shoreline (ft)
Maximum Depth of Treatment (ft)	18	Expected date(s) of treatment(s)	Early Spring Depending on Water Temp.

Treatment method: [X] Chemical [ ] Physical [ ] Biological Control [ ] Mechanical

Based on treatment method, describe chemical used, method of physical or mechanical control and disposal area, or the species and stocking rate for biological control. Renovate herbicide for EWM control and low dose Aquathol for selective CLP control (see avmp)

Plant survey method: [X] Rake [ ] Visual [ ] Other (specify) Survey Data from 2005 May Tier II (2005 avmp update)

Aquatic Plant Name	Check if Target Species	Relative Abundance % of Community
Curlyleaf Pondweed	X	40
Flatstem Pondweed		15
Chara		15
Coontail		15
Northern Watermilfoil		5
Eurasian Watermilfoil	X	5
Richardson's Pondweed		2
Eel Grass		1
Water Stargrass		1
Elodea		1

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Treatment Area # 2	LAT/LONG or UTM's Center of bed @ N41.32835 W85.77511	
Total acres to be controlled 1.86	Proposed shoreline treatment length (ft) 996	Perpendicular distance from shoreline (ft) 50
Maximum Depth of Treatment (ft) 6	Expected date(s) of treatment(s) mid to late summer depending on plant growth	

Treatment method: [X] Chemical [ ] Physical [ ] Biological Control [ ] Mechanical

Based on treatment method, describe chemical used, method of physical or mechanical control and disposal area, or the species and stocking rate for biological control. Nautique herbicide will be used for control of eel grass in nuisance areas only

Plant survey method: [X] Rake [X] Visual [ ] Other (specify) Data collected from 2005 late summer Tier II survey

Aquatic Plant Name	Check if Target Species	Relative Abundance % of Community
Eel grass	X	60
Flat-stemmed pondweed		10
Chara spp.		10
Common naiad		10
Sago pondweed		10

Treatment Area # 3	LAT/LONG or UTM's Center of bed @ N41.32234 W85.75774	
Total acres to be controlled 16	Proposed shoreline treatment length (ft) 10084	Perpendicular distance from shoreline (ft) 50
Maximum Depth of Treatment (ft) 6	Expected date(s) of treatment(s) mid to late summer depending on plant growth	

Treatment method: [X] Chemical [ ] Physical [ ] Biological Control [ ] Mechanical

Based on treatment method, describe chemical used, method of physical or mechanical control and disposal area, or the species and stocking rate for biological control. Nautique herbicide will be used for control of eel grass only in nuisance areas

Plant survey method: [ ] Rake [X] Visual [ ] Other (specify) Data collected from 2005 late summer Tier II survey

Aquatic Plant Name	Check if Target Species	Relative Abundance % of Community
Eel Grass	X	65
Coontail		15
Sago pondweed		10
Chara		5
Eurasian watermilfoil		2
Richardson's pondweed		1
Variable pondweed		1
Common naiad		1

Page 3 of 6

Treatment Area #	4	LAT/LONG or UTM's	Center of bed @ N41.32483 W85.74374		
Total acres to be controlled	1.5	Proposed shoreline treatment length (ft)	609	Perpendicular distance from shoreline (ft)	50-100
Maximum Depth of Treatment (ft)	6	Expected date(s) of treatment(s)	mid to late summer depending on plant growth		

Treatment method: [X] Chemical [ ] Physical [ ] Biological Control [ ] Mechanical

Based on treatment method, describe chemical used, method of physical or mechanical control and disposal area, or the species and stocking rate for biological control. Nautique herbicide will be used for control of eel grass only in nuisance areas

Plant survey method: [X] Rake [X] Visual [ ] Other (specify) Data collected from 2005 late summer Tier II survey

Aquatic Plant Name	Check if Target Species	Relative Abundance % of Community
Eel grass	X	75
Coontail		15
Chara		5
Eurasian watermiloil		3
Richardson's pondweed		2

Treatment Area #	5	LAT/LONG or UTM's	Center of bed @ N41.32737 W85.75197		
Total acres to be controlled	2.75	Proposed shoreline treatment length (ft)	1735	Perpendicular distance from shoreline (ft)	50
Maximum Depth of Treatment (ft)	6	Expected date(s) of treatment(s)	mid to late summer depending on plant growth		

Treatment method: [X] Chemical [ ] Physical [ ] Biological Control [ ] Mechanical

Based on treatment method, describe chemical used, method of physical or mechanical control and disposal area, or the species and stocking rate for biological control. Nautique herbicide will be used for control of eel grass only in nuisance areas

Plant survey method: [ ] Rake [X] Visual [ ] Other (specify) Data collected from 2005 late summer Tier II survey

Aquatic Plant Name	Check if Target Species	Relative Abundance % of Community
Eel grass	X	80
Coontail		10
Chara		8
Water Stargrass		2

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Treatment Area #	6	LAT/LONG or UTM's	Center of bed @ N41.33011 W85.7602		
Total acres to be controlled	3.25	Proposed shoreline treatment length (ft)	1933	Perpendicular distance from shoreline (ft)	50
Maximum Depth of Treatment (ft)	6	Expected date(s) of treatment(s)	mid to late summer depending on plant growth		

Treatment method: [X] Chemical [ ] Physical [ ] Biological Control [ ] Mechanical

Based on treatment method, describe chemical used, method of physical or mechanical control and disposal area, or the species and stocking rate for biological control. Nautique herbicide will be used for control of eel grass only in nuisance areas

Plant survey method: [X] Rake [X] Visual [ ] Other (specify) Data collected from 2005 late summer Tier II survey

Aquatic Plant Name	Check if Target Species	Relative Abundance % of Community
Eel grass	X	80
Water Stargrass		5
Common naiad		5
Coontail		5
Chara spp.		5

Treatment Area #	7	LAT/LONG or UTM's	Center of bed @ N41.33741 W85.77077		
Total acres to be controlled	3.22	Proposed shoreline treatment length (ft)	2126	Perpendicular distance from shoreline (ft)	50
Maximum Depth of Treatment (ft)	6	Expected date(s) of treatment(s)	mid to late summer depending on plant growth		

Treatment method: [X] Chemical [ ] Physical [ ] Biological Control [ ] Mechanical

Based on treatment method, describe chemical used, method of physical or mechanical control and disposal area, or the species and stocking rate for biological control. Nautique herbicide will be used for control of eel grass in nuisance areas

Plant survey method: [ ] Rake [X] Visual [ ] Other (specify) Data collected from 2005 late summer Tier II survey

Aquatic Plant Name	Check if Target Species	Relative Abundance % of Community
Eel grass	X	40
Eurasian watermilfoil		20
Chara		10
Curlyleaf pondweed		10
Flat-stemmed pondweed		10
Richardson's pondweed		10

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Treatment Area #	8	LAT/LONG or UTM's	Center of Bed @ N41.33295 W85.77929		
Total acres to be controlled	2.63	Proposed shoreline treatment length (ft)	1711	Perpendicular distance from shoreline (ft)	50
Maximum Depth of Treatment (ft)	6	Expected date(s) of treatment(s)	mid to late summer		

Treatment method: [X] Chemical [ ] Physical [ ] Biological Control [ ] Mechanical

Based on treatment method, describe chemical used, method of physical or mechanical control and disposal area, or the species and stocking rate for biological control. Nautique herbicide will be used for control of eel grass in nuisance areas

Plant survey method: [X] Rake [X] Visual [ ] Other (specify) Data collected from 2005 late summer Tier II survey

Aquatic Plant Name	Check if Target Species	Relative Abundance % of Community
Eel grass	X	30
Chara		30
Coontail		30
Common naiad		10

INSTRUCTIONS: Whoever treats the lake fills in "Applicant's Signature" unless they are a professional. If they are a professional company who specializes in lake treatment, they should sign on the "Certified Applicant" line.

Applicant Signature	Date
Certified Applicant's Signature	Date

FOR OFFICE ONLY

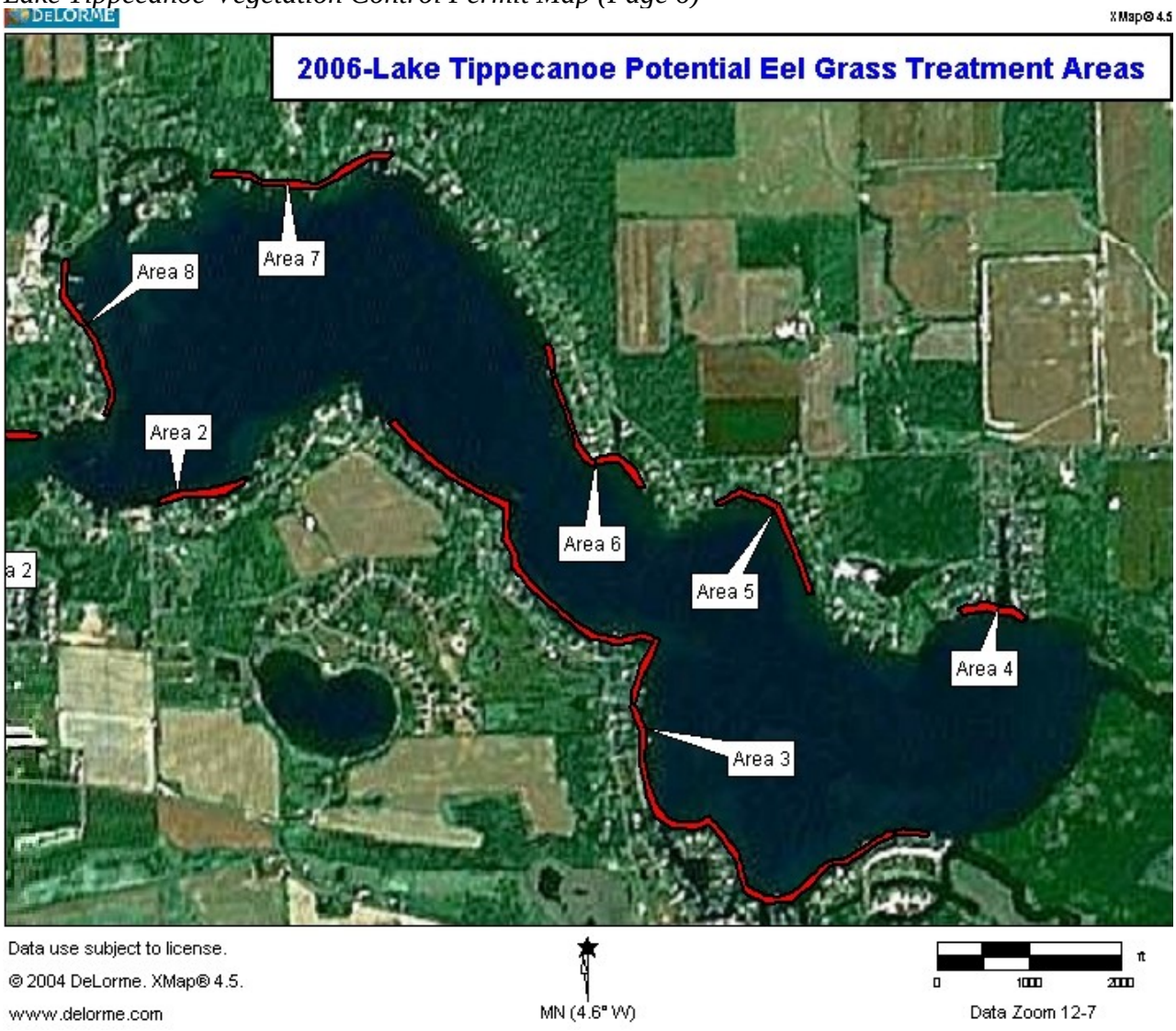
[ ] Approved [ ] Disapproved	Fisheries Staff Specialist
[ ] Approved [ ] Disapproved	Environmental Staff Specialist

Mail check or money order in the amount of $5.00 to:

DEPARTMENT OF NATURAL RESOURCES
DIVISION OF FISH AND WILDLIFE
COMMERCIAL LICENSE CLERK
402 WEST WASHINGTON STREET ROOM W273
INDIANAPOLIS, IN 46204

AQUATIC CONTROL

Lake Tippecanoe-Vegetation Control Permit Map (Page 6)



James Lake-Vegetation Control Permit Application

APPLICATION FOR AQUATIC VEGETATION CONTROL PERMIT
State Form 26727 (R / 11-03)
Approved State Board of Accounts 1987
[ ] Whole Lake [X] Multiple Treatment Areas
Check type of permit
INSTRUCTIONS: Please print or type information

FOR OFFICE USE ONLY
License No.
Date Issued
Lake County

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DEPARTMENT OF NATURAL RESOURCES
Division of Fish and Wildlife
Commercial License Clerk
402 West Washington Street, Room W273
Indianapolis, IN 46204

FEE: $5.00

Applicant's Name	Lake Assoc. Name	
Lake Tippecanoe POA	Lake Tippecanoe POA	
Rural Route or Street		Phone Number
67 EMS T 49A Lane		574-834-2185
City and State		ZIP Code
Syracuse, IN		46567
Certified Applicator (if applicable)	Company or Inc. Name	Certification Number
Rural Route or Street		Phone Number
City and State		ZIP Code

Lake (One application per lake)	Nearest Town	County
Lake James	North Webster	Kosciusko
Does water flow into a water supply		[ ] Yes [X] No

Please complete one section for *EACH* treatment area. Attach lake map showing treatment area and denote location of any water supply intake.

Treatment Area # 1	LAT/LONG or UTM's	Treatment of Eurasian watermilfoil and curlyleaf where it occurs (see avmp update)
Total acres to be controlled <30 acres	Proposed shoreline treatment length (ft)	Perpendicular distance from shoreline (ft)
Maximum Depth of Treatment (ft) 18	Expected date(s) of treatment(s)	Early April (water temp dependent)

Treatment method: [X] Chemical [ ] Physical [ ] Biological Control [ ] Mechanical

Based on treatment method, describe chemical used, method of physical or mechanical control and disposal area, or the species and stocking rate for biological control. Renovate for EWM and low dose Aquathol K for curlyleaf pondweed (no more than 30 acres, areas determined following spring sampling)

Plant survey method: [X] Rake [X] Visual [ ] Other (specify) Survey Results from 2005 May Tier II

Aquatic Plant Name	Check if Target Species	Relative Abundance % of Community
Curlyleaf Pondweed	X	20
Coontail		20
Chara		15
Eurasian watermilfoil	X	15
Flatstem Pondweed		10
Elodea		10
Whorled watermilfoil		5
Water Stargrass		3
Eel Grass		2

Treatment Area # 2	LAT/LONG or UTM's Center of bed @ N41.32471 W85.73584	
Total acres to be controlled 1.75	Proposed shoreline treatment length (ft) 970	Perpendicular distance from shoreline (ft) 50
Maximum Depth of Treatment (ft) 6	Expected date(s) of treatment(s) mid to late summer	

Treatment method: [X] Chemical [ ] Physical [ ] Biological Control [ ] Mechanical

Based on treatment method, describe chemical used, method of physical or mechanical control and disposal area, or the species and stocking rate for biological control. Nautique herbicide will be used for control of eel grass in nuisance areas only

Plant survey method: [X] Rake [X] Visual [ ] Other (specify) data collected during late summer Tier II survey

Aquatic Plant Name	Check if Target Species	Relative Abundance % of Community
Eel grass	X	50
Coontail		45
Common naiad		5
Sago pondweed		5
Flat-stemmed pondweed		5

Treatment Area # 3	LAT/LONG or UTM's Center of bed @ N41.32359 W85.72535	
Total acres to be controlled 1.86	Proposed shoreline treatment length (ft) 1190	Perpendicular distance from shoreline (ft) 50
Maximum Depth of Treatment (ft) 6	Expected date(s) of treatment(s) mid to late summer depending on plant growth	

Treatment method: [X] Chemical [ ] Physical [ ] Biological Control [ ] Mechanical

Based on treatment method, describe chemical used, method of physical or mechanical control and disposal area, or the species and stocking rate for biological control. Nautique herbicide will be used for control of eel grass in nuisance areas only

Plant survey method: [X] Rake [X] Visual [ ] Other (specify) data collected in 2002 late summer plant survey

Aquatic Plant Name	Check if Target Species	Relative Abundance % of Community
Eel grass	X	40
Coontail		40
Common naiad		10
Chara spp.		5
Variable pondweed		5

Treatment Area # 4	LAT/LONG or UTM's Center of bed @ N41.31750 W85.72284		
Total acres to be controlled 1.5	Proposed shoreline treatment length (ft) 930	Perpendicular distance from shoreline (ft) 50-100	
Maximum Depth of Treatment (ft) 6	Expected date(s) of treatment(s) mid to late summer		

Treatment method: [X] Chemical [ ] Physical [ ] Biological Control [ ] Mechanical

Based on treatment method, describe chemical used, method of physical or mechanical control and disposal area, or the species and stocking rate for biological control. Nautique herbicide will be used for control of eel grass in nuisance areas only

Plant survey method: [X] Rake [X] Visual [ ] Other (specify) data collected during 2004 late summer Tier II survey

Aquatic Plant Name	Check if Target Species	Relative Abundance % of Community
Eel grass	X	40
Coontail		40
Chara spp.		10
Common naiad		5
Water stargrass		5

Treatment Area #	LAT/LONG or UTM's		
Total acres to be controlled	Proposed shoreline treatment length (ft) channel	Perpendicular distance from shoreline (ft) channel	
Maximum Depth of Treatment (ft)	Expected date(s) of treatment(s)		

Treatment method: [ ] Chemical [ ] Physical [ ] Biological Control [ ] Mechanical

Based on treatment method, describe chemical used, method of physical or mechanical control and disposal area, or the species and stocking rate for biological control.

Plant survey method: [ ] Rake [ ] Visual [ ] Other (specify)

Aquatic Plant Name	Check if Target Species	Relative Abundance % of Community

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Treatment Area # 5	LAT/LONG or UTM's Center of bed @ N41.31256 W85.72381		
Total acres to be controlled 1	Proposed shoreline treatment length (ft) 515	Perpendicular distance from shoreline (ft) 50-100	
Maximum Depth of Treatment (ft) 6	Expected date(s) of treatment(s) mid to late summer		

Treatment method: [X] Chemical [ ] Physical [ ] Biological Control [ ] Mechanical

Based on treatment method, describe chemical used, method of physical or mechanical control and disposal area, or the species and stocking rate for biological control. Nautique herbicide will be used for control of eel grass in nuisance areas only

Plant survey method: [X] Rake [ ] Visual [ ] Other (specify) Data collected during 2004 late summer Tier II survey

Aquatic Plant Name	Check if Target Species	Relative Abundance % of Community
Eel grass	X	70
Chara		20
Coontail		10

INSTRUCTIONS: Whoever treats the lake fills in "Applicant's Signature" unless they are a professional. If they are a professional company who specializes in lake treatment, they should sign on the "Certified Applicant" line.

Applicant Signature	Date
Certified Applicant's Signature	Date

FOR OFFICE ONLY

[ ] Approved [ ] Disapproved	Fisheries Staff Specialist
[ ] Approved [ ] Disapproved	Environmental Staff Specialist

Mail check or money order in the amount of $5.00 to:

DEPARTMENT OF NATURAL RESOURCES
DIVISION OF FISH AND WILDLIFE
COMMERCIAL LICENSE CLERK
402 WEST WASHINGTON STREET ROOM W273
INDIANAPOLIS, IN 46204

James Lake-Vegetation Control Permit Map (Page 5)

Oswego Lake-Vegetation Control Permit Application

APPLICATION FOR AQUATIC VEGETATION CONTROL PERMIT
State Form 26727 (R / 11-03)
Approved State Board of Accounts 1987
[ ] Whole Lake [X] Multiple Treatment Areas
Check type of permit
INSTRUCTIONS: Please print or type information

FOR OFFICE USE ONLY
License No.
Date Issued
Lake County

Return to: Page 1 of 3
DEPARTMENT OF NATURAL RESOURCES
Division of Fish and Wildlife
Commercial License Clerk
402 West Washington Street, Room W273
Indianapolis, IN 46204

FEE: $5.00

Applicant's Name	Lake Assoc. Name	
Lake Tippecanoe POA	Lake Tippecanoe POA	
Rural Route or Street: 67 EMS T 49A Lane		Phone Number: 574-834-2185
City and State: Syracuse, IN		ZIP Code: 46567
Certified Applicator (if applicable)	Company or Inc. Name	Certification Number
Rural Route or Street		Phone Number
City and State		ZIP Code

Lake (One application per lake)	Nearest Town	County
Oswego Lake	North Webster	Kosciusko
Does water flow into a water supply		[ ] Yes [X] No

Please complete one section for *EACH* treatment area. Attach lake map showing treatment area and denote location of any water supply intake.

Treatment Area # 1	LAT/LONG or UTM's	Treatment of EWM and CLP throughout lake (areas determined following survey, no more than 20 acres)
Total acres to be controlled <20 acres	Proposed shoreline treatment length (ft)	Perpendicular distance from shoreline (ft)
Maximum Depth of Treatment (ft) 18	Expected date(s) of treatment(s)	Early April for Curlyleaf and EWM (potential later treatment for EWM)

Treatment method: [X] Chemical [ ] Physical [ ] Biological Control [ ] Mechanical

Based on treatment method, describe chemical used, method of physical or mechanical control and disposal area, or the species and stocking rate for biological control. Renovate for selective control of EWM and low dose Aquathol K for selective control of CLP (see 2005 avmp update)

Plant survey method: [X] Rake [X] Visual [ ] Other (specify) Overall results from May, 2005 Tier II survey

Aquatic Plant Name	Check if Target Species	Relative Abundance % of Community
Chara		20
Coontail		20
Curlyleaf Pondweed	X	20
Flatstem Pondweed		20
Northern Watermilfoil		8
Eurasian Watermilfoil	X	7
Richardson's Pondweed		5

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Treatment Area # 2	LAT/LONG or UTM's Center of Bed @ N41.32923 W85.78409		
Total acres to be controlled 2.12	Proposed shoreline treatment length (ft) 2100	Perpendicular distance from shoreline (ft) 50	
Maximum Depth of Treatment (ft) 6	Expected date(s) of treatment(s) mid to late summer depending on plant growth		

Treatment method: [X] Chemical [ ] Physical [ ] Biological Control [ ] Mechanical

Based on treatment method, describe chemical used, method of physical or mechanical control and disposal area, or the species and stocking rate for biological control. Nautique herbicide will be used to control eel grass only in nuisance areas after IDNR/LTPOA survey

Plant survey method: [X] Rake [X] Visual [ ] Other (specify) Data collected in 2005 late summer avmp

Aquatic Plant Name	Check if Target Species	Relative Abundance % of Community
Eel grass	X	30
Chara		20
Coontail		20
Spiny Naiad		5
Sago pondweed		5
Small Pondweed		5
Richardson's Pondweed		3
Flatstem Pondweed		3
Eurasian watermilfoil		3
Northern Watermilfoil		2
Curlyleaf pondweed		2
Bladderwort		2

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Applicant Signature	Date
Certified Applicant's Signature	Date

FOR OFFICE ONLY

[ ] Approved [ ] Disapproved	Fisheries Staff Specialist
[ ] Approved [ ] Disapproved	Environmental Staff Specialist

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AQUATIC CONTROL

Oswego Lake-Vegetation Control Permit Application Map (Page 3)